Skycraper 3.0

Lexington ave. 610, NY

Ondřej Tomšů

2017

The chance we are not living in a computer simulation is 'one in billions...

Elon Musk

content

short description:

This thesis deal with impact of technology advance to humanity, architecture transformation and human traditions. For better practising is whole story situated into the second half of the 21st century on the Manhattan. Each part of the story is based on real predictions or nowdays technologies. Final result is live skyline for Manhattan with complex story of future human being.

assignment:

design skycraper instead of empty lot in New York City. Address: Lexington avenue 610
No other limitation

intention:

design skycraper based on depp analysis of the location. Try to understand local laws and habits. Design modern functionall building with adequate materials, structure and spatial dividing. I want to implement in this project all suitable technologies for better living such as inteligent building, IoT, etc.I want to understand how the city will look in next few decades. New York city is my dream city and this project let me taste a bit of local atmosphere.

My motto is: Do the better World.

History of New York:

The first native New Yorkers were the Lenape, an Algonquin people who hunted, fished and farmed in the area between the Delaware and Hudson rivers. Europeans began to explore the region at the beginning of the 16th century–among the first was Giovanni da Verrazzano, an Italian who sailed up and down the Atlantic coast in search of a route to Asia–but none settled there until 1624. That year, the Dutch West India Company sent some 30 families to live and work in a tiny settlement on “Nutten Island” (today’s Governors Island) that they called New Amsterdam. In 1626, the settlement’s governor general, Peter Minuit, purchased the much larger Manhattan Island from the natives for 60 guilders in trade goods such as tools, farming equipment, cloth and wampum (shell beads). Fewer than 300 people lived in New Amsterdam when the settlement moved to Manhattan. But it grew quickly, and in 1760 the city (now called New York City; population 18,000) surpassed Boston to become the second-largest city in the American colonies. Fifty years later, with a population 202,589, it became the largest city in the Western hemisphere. Today, more than 8 million people live in the city’s five boroughs.

In 1664, the British seized New Amsterdam from the Dutch and gave it a new name: New York City. For the next century, the population of New York City grew larger and more diverse: It included immigrants from the Netherlands, England, France and Germany; indentured servants; and African slaves.

During the 1760s and 1770s, the city was a center of anti-British activity–for instance, after the British Parliament passed the Stamp Act in 1765, New Yorkers closed their businesses in protest and burned the royal governor in effigy. However, the city was also strategically important, and the British tried to seize it almost as soon as the Revolutionary War began. In August 1776, despite the best efforts of George Washington’s Continental Army in Brooklyn and Harlem Heights, New York City fell to the British. It served as a British military base until 1783.

NEW YORK CITY IN THE 19TH CENTURY

The city recovered quickly from the war, and by 1810 it was one of the nation’s most important ports. It played a particularly significant role in the cotton economy: Southern planters sent

their crop to the East River docks, where it was shipped to the mills of Manchester and other English industrial cities. Then, textile manufacturers shipped their finished goods back to New York.

But there was no easy way to carry goods back and forth from the growing agricultural hinterlands to the north and west until 1817, when work began on a 363-mile canal from the Hudson River to Lake Erie. The Erie Canal was completed in 1825. At last, New York City was the trading capital of the nation.

As the city grew, it made other infrastructural improvements. In 1811, the “Commissioner’s Plan” established an orderly grid of streets and avenues for the undeveloped parts of Manhattan north of Houston Street. In 1837, construction began on the Croton Aqueduct, which provided clean water for the city’s growing population. Eight years after that, the city established its first municipal agency: the New York City Police Department.

Meanwhile, increasing number of immigrants, first from Germany and Ireland during the 1840s and 50s and then from Southern and Eastern Europe, changed the face of the city. They settled in distinct ethnic neighborhoods, started businesses, joined trade unions and political organizations and built churches and social clubs. For example, the predominantly Irish-American Democratic club known as Tammany Hall became the city’s most powerful political machine by trading favors such as jobs, services and other kinds of aid for votes.

NEW YORK CITY IN THE 20TH CENTURY

At the turn of the 20th century, New York City became the city we know today. In 1895, residents of Queens, the Bronx, Staten Island and Brooklyn–all independent cities at that time–voted to “consolidate” with Manhattan to form a five-borough “Greater New York.” As a result, on December 31, 1897, New York City had an area of 60 square miles and a population of a little more than 2 million people; on January 1, 1898, when the consolidation plan took effect, New York City had an area of 360 square miles and a population of about 3,350,000 people.

The 20th century was an era of great struggle for American cities, and New York was no exception. The construction of interstate highways and suburbs after World War II encour-

aged affluent people to leave the city, which combined with deindustrialization and other economic changes to lower the tax base and diminish public services. This, in turn, led to more out-migration and “white flight.” However, the Hart-Cellar Immigration and Nationality Act of 1965 made it possible for immigrants from Asia, Africa, the Caribbean and Latin America to come to the United States. Many of these newcomers settled in New York City, revitalizing many neighborhoods.

NEW YORK CITY IN THE NEW MILLENNIUM

On September 11, 2001, New York City suffered the deadliest terrorist attack in the history of the United States when a group of terrorists crashed two hijacked jets into the city’s tallest buildings: the twin towers of the World Trade Center. The buildings were destroyed and nearly 3,000 people were killed. In the wake of the disaster, the city remained a major financial capital and tourist magnet, with over 40 million tourists visiting the city each year.

Today, more than 8 million New Yorkers live in the five boroughs–more than one-third of whom were born outside the United States. Thanks to the city’s diversity and vibrant intellectual life, it remains the cultural capital of the United States.[1]

1, History.com Staff, 10,2010, New York City, http://www.history.com/topics/new-york-city

New York borough and quarters:

fig 1. NYC borough

analysis:

New York borough and quarters:

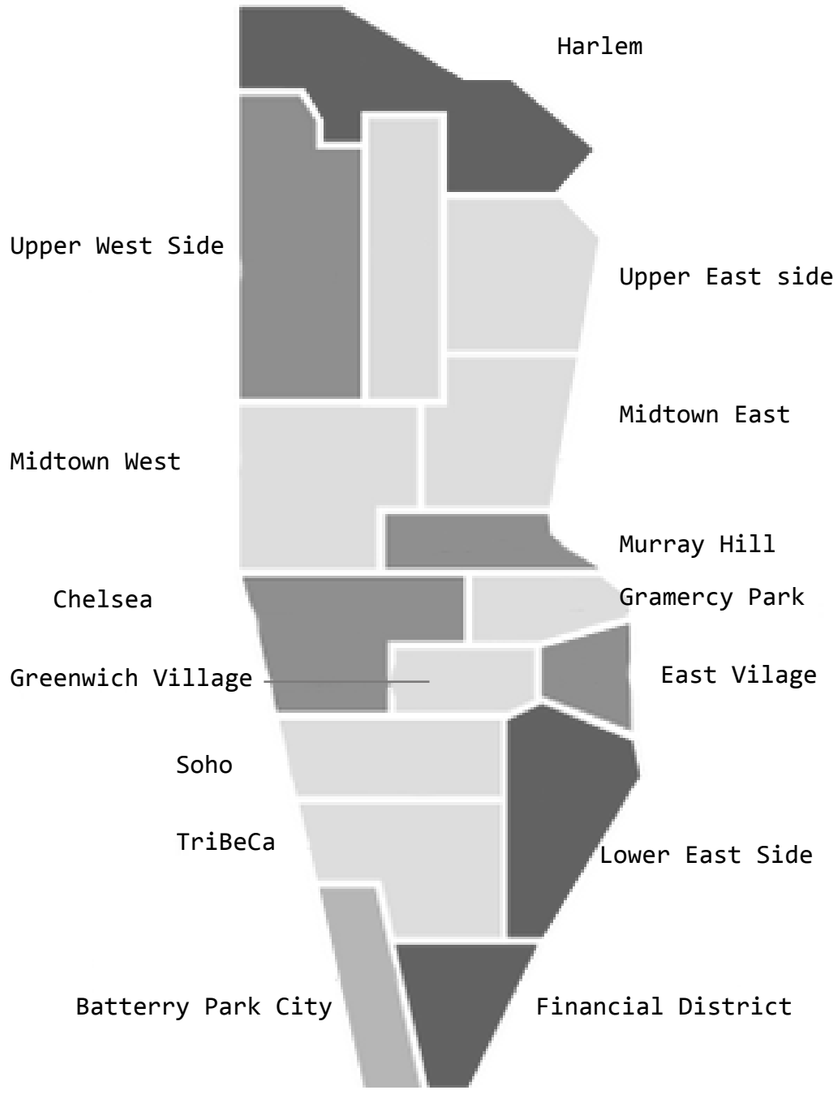


fig 2. Manhattan

analysis:

Midtown

Midtown Manhattan, or Midtown, represents the central lengthwise portion of the borough and island of Manhattan in New York City. Midtown is home to some of the city‘s most iconic buildings, including the Empire State Building, the Chrysler Building, and the headquarters of the United Nations, and it contains world-renowned commercial zones such as Rockefeller Center, Broadway, and Times Square. Along Manhattan‘s north--south long axis, Midtown Manhattan separates Lower Manhattan from Upper Manhattan.

Midtown Manhattan is the largest central business district in the world and ranks among the most intensely used pieces of real estate in the world. While Lower Manhattan is the main financial center, Midtown is the country‘s largest commercial, entertainment, and media center; Midtown Manhattan is also a growing financial center, second in importance in the United States only to Lower Manhattan‘s Financial District. The majority of New York City‘s skyscrapers, including its tallest hotels and apartment towers, lie within Midtown. The area hosts commuters and residents working in its offices, hotels, and retail establishments; many tourists, visiting residents, and students populate the district. Some areas, such as Times Square and the Fifth Avenue corridor, have large clusters of retail stores, and Times Square is the center of Broadway theatre. The Avenue of the Americas holds the headquarters of three of the four major U.S. television networks.[2]

2, eikipedia.org, 10,2010, Midtown Manhattan, https://en.wikipedia.org/wiki/Midtown_Manhattan

analysis:

Public transport analysis

Construction site is located near by importatn station. The station is at 53 Lex. Avenue. This staion is intersection station. There is crossing green line with the orange. Directly next by the building is located bus stop. Also the site is not to far from Grand Central. It is reachable quite fast by taxi or UBER. The Grand Central Station is the most important station in the city. It is terminal station for most of the commuters leading to the city.

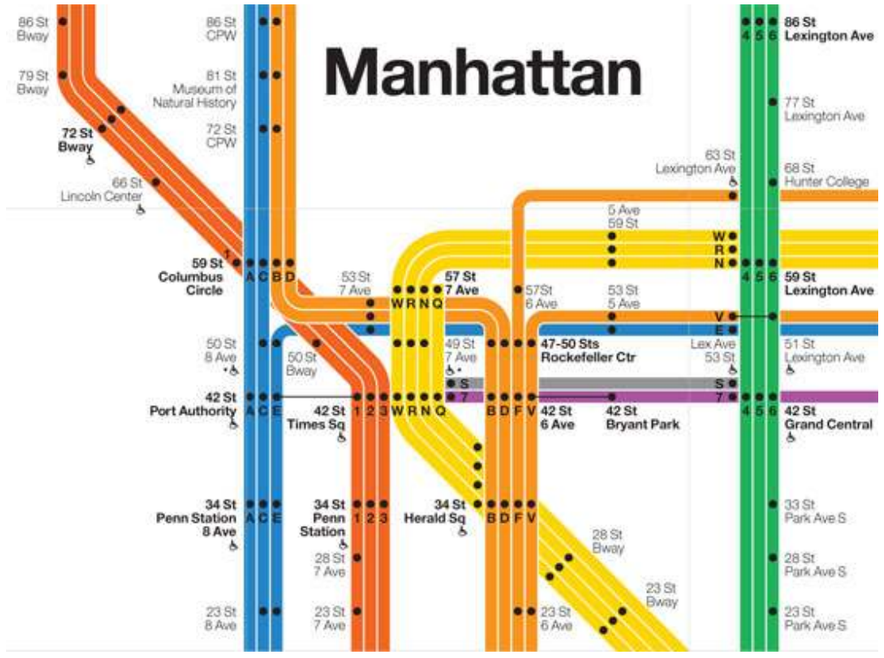


fig 3. MTA system

Location conslusion

Building is located in the most expensive part of the city. This district is home for most of the businessman. This is one of the most important financial district. There are situated famous skylines such as Empire state building and etc. Building is also fast reachable by public transport and near by GTC. As a main building program should be combination between office building, condo living and some kind of entertaiment.

analysis:

Demography:

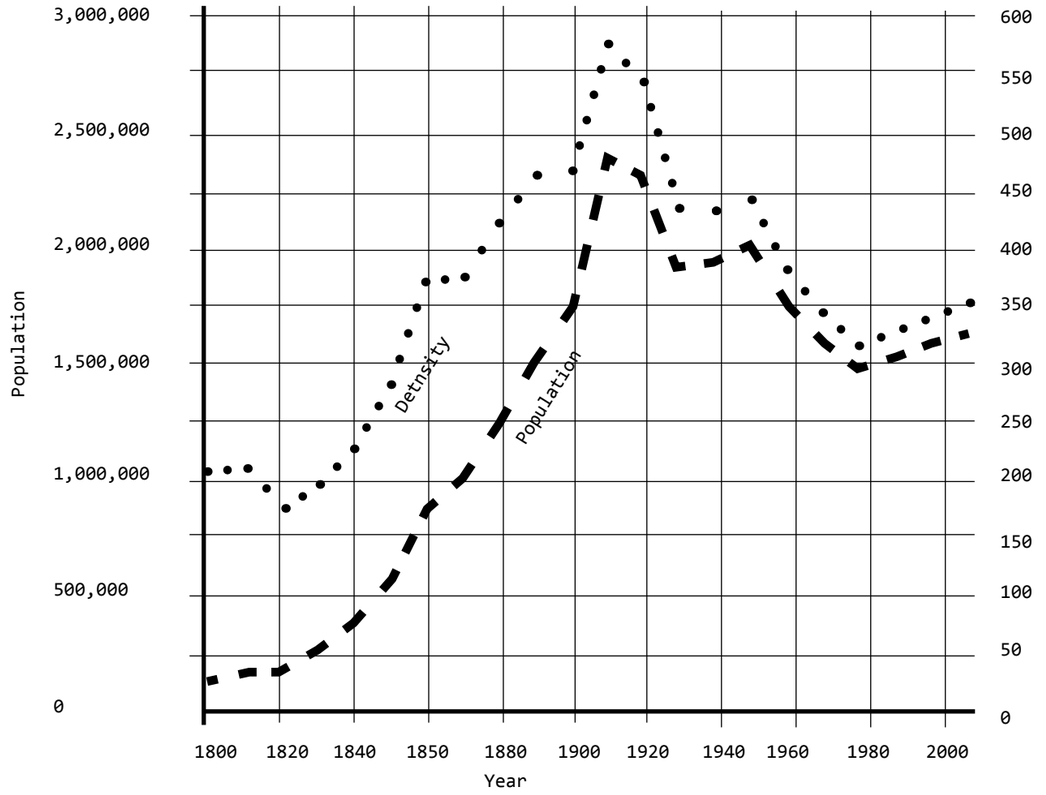
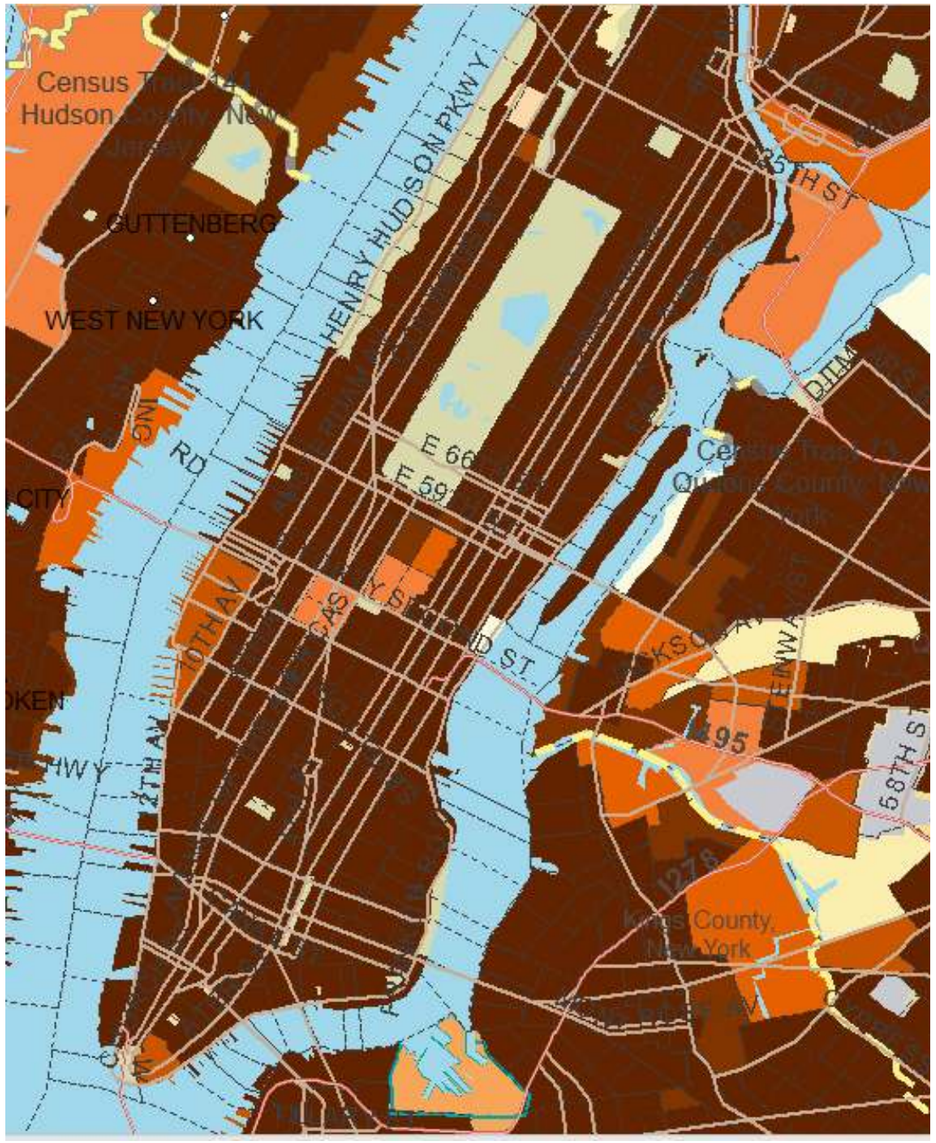


fig 4, population density Manhattan

analysis:

Demographic: population density

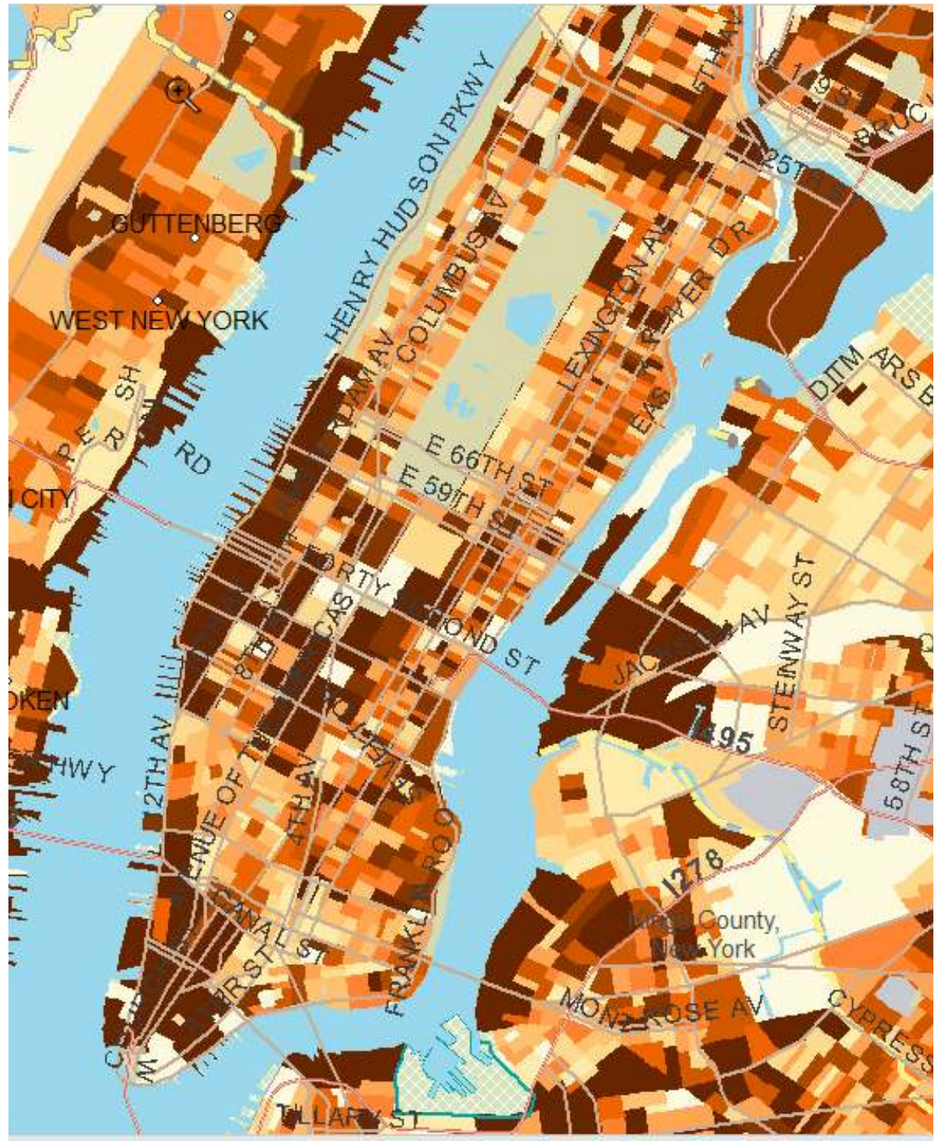


No data aviable
Not rated by census
N/a
<5 people per sqm
5-50 per sqm
50-200 per sqm
200-500 per sqm
500-1000 per sqm
1000-3000 per sqm
3000-5000 per sqm
5000-7000 per sqm
7000-9000 per sqm
9000-15000 per sqm
15000-508698 per sqm

fig 8,Demographic: population density

analysis:

Demographic: population change



No data aviable
Not rated by census
N/a
< -25 %
-25% to - 15%
-15% to - 10%
-10% to - 5%
-5% to -1%
-1% to 1%
1% to 5%
5% to 10%
10% to 15%
15% to 25%
>25%

fig 9,Demographic: Demographic: population change

analysis:

Age by sex Manhattan

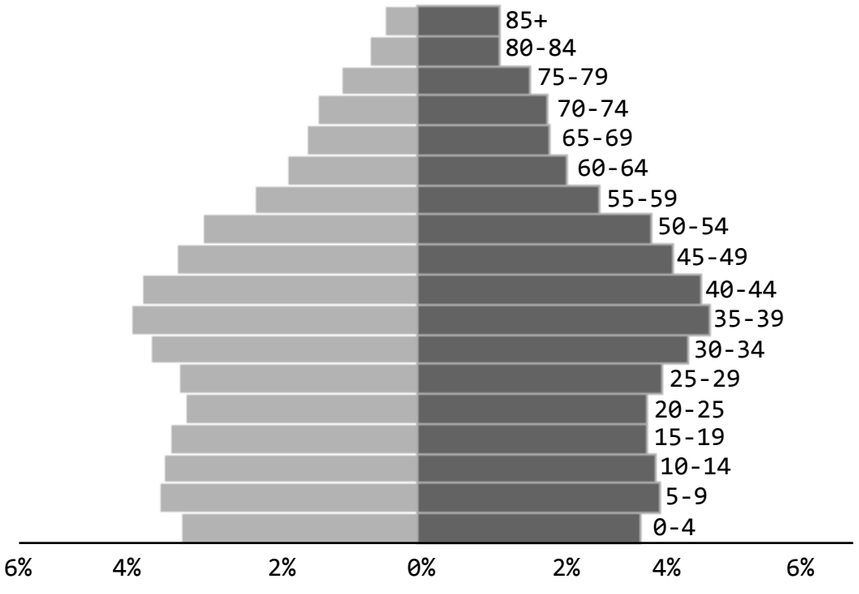


fig 10, Age by sex Manhattan

Day time population

Manhattan’s daytime population is approximately 3.94 million; the census- defined daytime population omits almost one-fourth of the total, or nearly 800,000 people. The daytime population consists of approximately 1.61 million commuting workers, 1.46 million local residents, 404,000 out-of-town visitors, 374,000 local day-trip visitors, 17,000 hospital patients, and 70,000 commuting students.
52% of Manhattan’s Census-defined daytime population consists of individuals who do not live in Manhattan and commute there for work. Every day, 1.63 million commuters enter Manhattan for work, while 132,000 Manhattan residents commute elsewhere for work[4]

4,Mitchell L. Moss and Carson Qing. ,03,2013, Rudin Center for Transportation Policy and Management Wagner School of Public Service New York University, online: https://wagner.nyu.edu/files/rudincenter/dynamic_pop_manhattan.pdf

analysis:

World population prediction

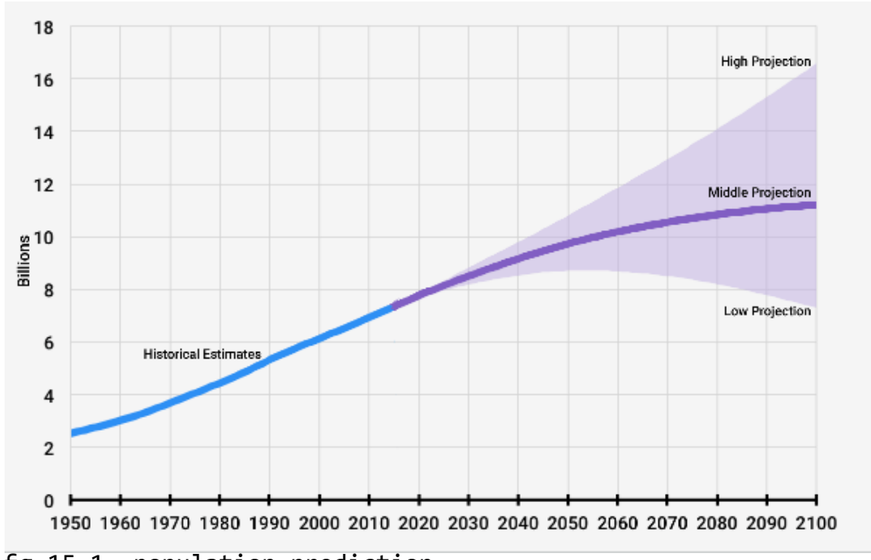


fig 15.1, population prediction

Regional population prediction

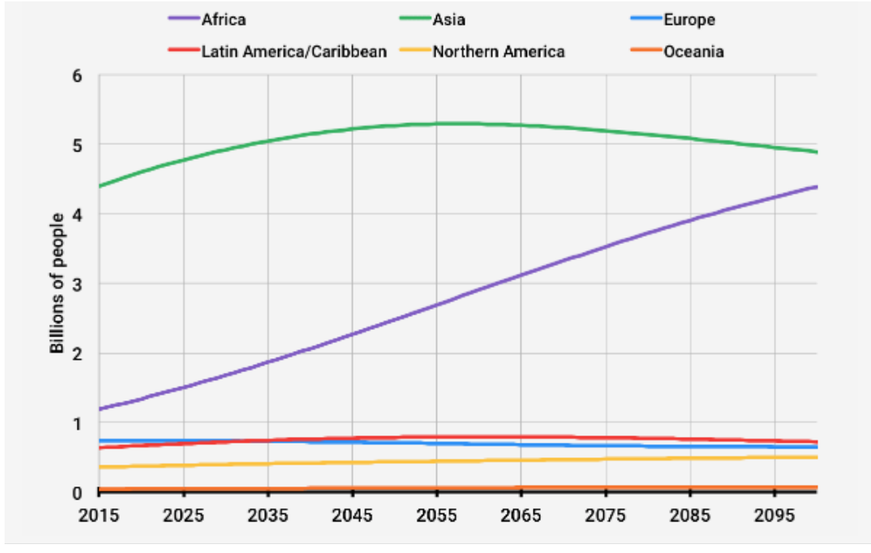


fig 15.2, population prediction

analysis:

Where do New Yorkers work

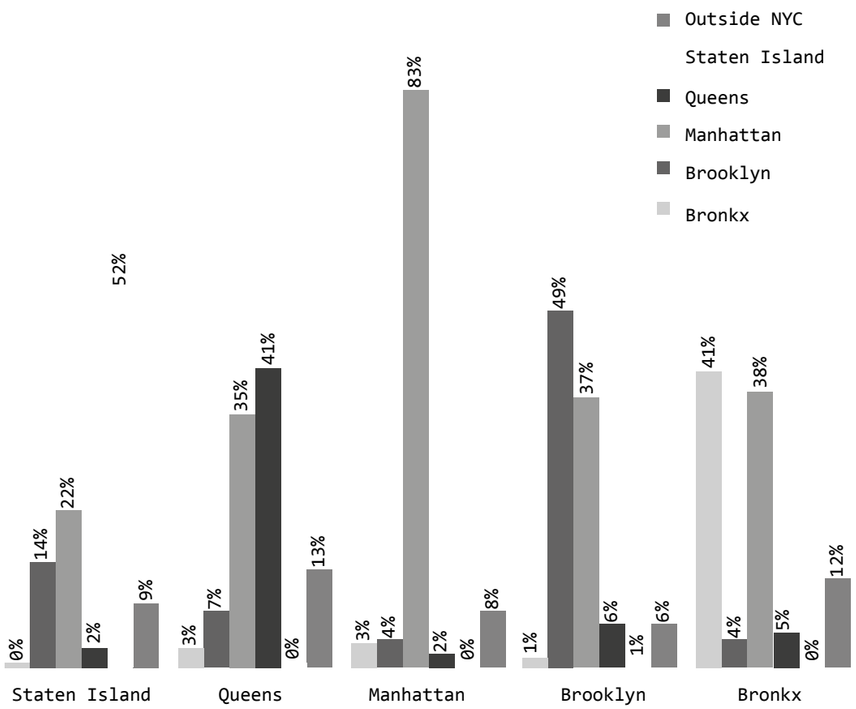


fig 11, Where do New Yorkers work

Employement in New York City - total 100%

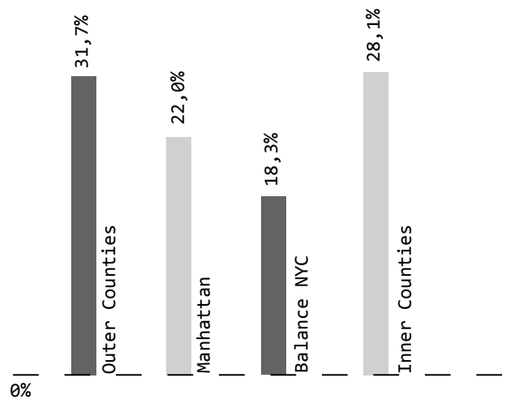


fig 12, Employement in New York City

analysis:

Commuting within New York

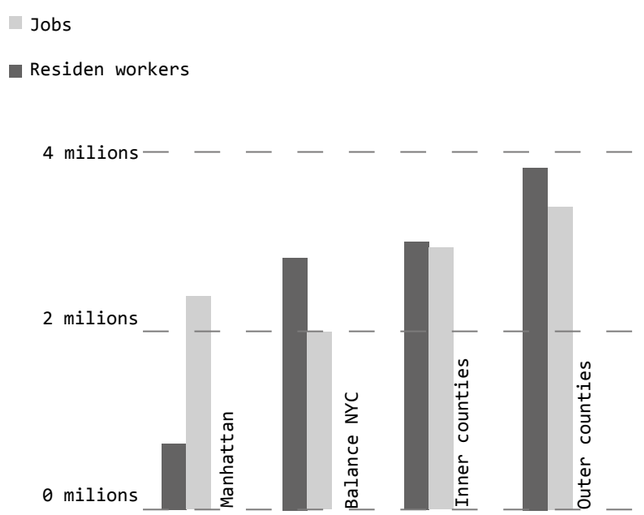


fig 13 , Commuting within New York

Percentage commuter greater then 90 min

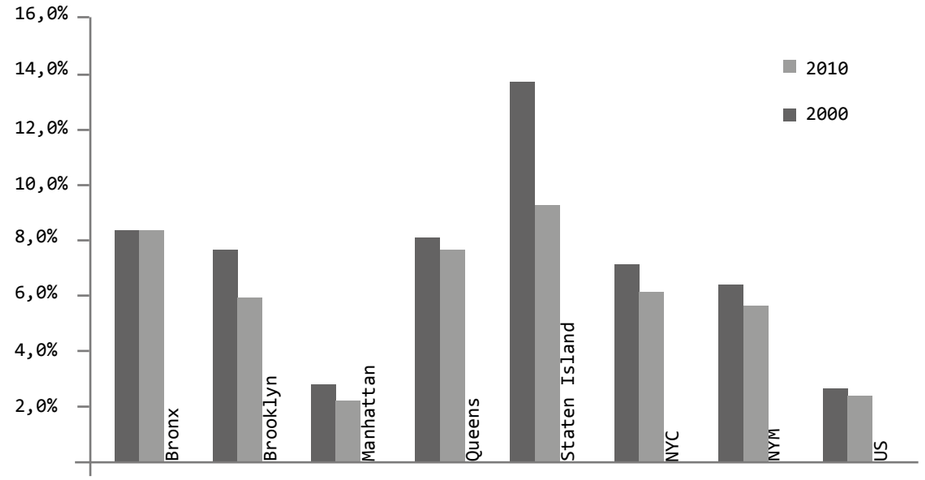


fig 14 , Percentage commuter greater then 90 min, 11.2016, based on: http://www.clrsearch.com

Jobs prediction:

The application of machine learning to the ever-increasing amounts of data being produced throughout the world will change everything when it comes to our jobs. Yes, these new technologies will make jobs easier for many people – but they also may make many of those jobs obsolete. Algorithms can now answer our emails, interpret medical images, find us the legal case to win, analyze our data, and more.

Machine learning relies on algorithms that “learn” from past examples, thereby relieving the programmer from having to write lines of code to deal with every eventuality. This ability to learn, coupled with advances in robotics, cloud computing and mobile technology, means that computers can now help humans perform complex tasks faster and better than ever before.

But what happens to the human they’ve outpaced?

The World Economic Forum postulated that we will lose 5 million jobs to computers and robots over the next five years. Are they right?

Data volumes will continue to grow. There’s absolutely no question that we will continue generating larger and larger volumes of data, especially considering that the number of handheld devices and Internet-connected devices is expected to grow exponentially. All this data, coupled with the ability to analyze it, will change the jobs market forever.
More tools for analysis (without the analyst) will emerge. Microsoft and Salesforce both recently announced features to let non-coders create apps to view business data. This means that it’s very likely the need for data scientists and analysts will drop off markedly.
Prescriptive analytics will be built in to business analytics software. IDC predicts that half of all business analytics software will include the intelligence where it’s needed by 2020. Predictive analytics can reduce or eliminate the need for human experts in the field. Programs have already proven that they can predict the outcome of the Superbowl and Supreme Court decisions, making human analysts on their way to becoming obsolete.

Machine learning is a top strategic trend for 2016, according to Gartner. And Ovum predicts that machine learning will be a necessary element for data preparation and predictive analysis in businesses moving forward. But it doesn’t stop with business strategy: IBM’s Watson proved it can diagnose lung cancer from analyzing MRI scans much more reliably than real people. And sophisticated databases can use machine learning to review millions of documents in legal proceedings in a fraction of the time. This puts both some doctors and lawyers at risk.
“Autonomous agents and things” will continue to be a huge trend, according to Gartner, including robots, autonomous vehicles, virtual personal assistants, and smart advisers. This will affect jobs including taxi and bus drivers, customer service jobs,
Algorithm markets will also emerge. Forrester surmises that businesses will quickly learn that they can purchase algorithms rather than program them and add their own data. This could reduce the number of programming and computer science positions necessary for companies.
Cognitive technology will be the new buzzword. A new name for artificial intelligence, cognitive technology includes natural language processing and machine learning to allow humans and computers to interact more naturally than ever before. Insurance agents, teachers, financial planners, and human resources personnel could all eventually be replaced by smart computers that can perform the same function.
Businesses using data will see $430 billion in productivity benefits over their competition not using data by 2020, according to IIA. Implicitly, that means these companies will not need to hire additional workers to see those productivity benefits.
Looking at some of these key predictions about the growth of big data, machine learning, and AI, it seems clear that many jobs will be at risk in the near future. And unlike previous

analysis:

“revolutions,” low-wage, blue-collar jobs are not the only ones at risk. When a computer can outperform a seasoned lawyer or oncologist at his or her job, that’s when you know it’s time to worry about your own job security.

And that time is now.[7]

Robots will eliminate 6% of all US jobs by 2021, report says[7]

Experts predict robots will take over 30% of our jobs by 2025 – and white-collar jobs aren't immune[8]

Remote work

Remote work is labeled many ways. We define it as work completed in an environment other than the employer workplace. This can include working from a home office for employees & contractors and/or working from any other imaginable environment (hotel, beach, in transit, etc.). Remote work is a fast growing trend in the workplace with 3 out of 5 North American workers stating they can work remotely.

There are a variety of terms to describe the process of working from a location other than the traditional office. Common terms are telecommuting, home, remote, mobile, virtual, or cloud working. The frequency with which remote work is being done may also affect the “definition” of the activity. The main categories based on the scale and relationship of remote work application are represented visually in the following graphic.

Working remotely can be as basic as using online meetings and training within your organization. This module includes an online meeting resource page with detailed information for companies or individuals interested in remote communication such as online meetings, client/staff training, conferences, etc. Online meetings can save time, money and be more effective when done properly. There are even carbon calculators to show how much carbon your company saves by NOT driving or flying to the next meeting.

The growth of remote work is being supported by a number of factors.

6,Bernard Marr,05,2016, If These Predictions Are Right, We Will Lose Milions Of Jobs To Computers, Forbes

7,Olivian Solon, 08,2016, Artificial inteligence, The Guardian, https://www.theguardian.com/technology/2016/sep/13/artificial-intelligence-robots-threat-jobs-forrester-report

analysis:

Devices and infrastructure

Devices such as laptops, smartphones, and tablets to gether with broadband infrastructure and new applicati ons are making remote work much more achievable and productive.

- instant and secure access to work data
- cloud computing
- broadband/hi-speed Internet
- remote access devices

Business/worker benefits

Both employees and employers can benefit from remote work options.

- retain and attract skilled workers
- save money and travel time
- less distractions
- individual work environment for employees

Culture & generation

Employers need to engage with a new generation of workers who are showing a preference for remote work options.[9]

Artificial inteligence and jobs offer

The robots are coming and if the forecasts are correct, they could sound the death knell for millions of jobs

In recent years, automation has become increasingly prevalent. We think nothing of paying for groceries at a scanner or transferring money on a screen without going into a bank. We’ve grown accustomed to the idea of self-driving cars and computers that can talk to us.

As marvellous as these innovations may seem, they can also be destructive, rendering entire professions obsolete even as they boost productivity and convenience. And now, if widespread predictions are correct, automation in the workplace is set to increase at an unprecedented rate.

“There’s going to be a huge change, comparable to the in-

9, North Carolina department of commerce , Remotr work, http://northcarolinadeportal.com/remotework/what-is-remote-work/employers/

dustrial revolution," says Jerry Kaplan, a Silicon Valley entrepreneur who teaches a class in artificial intelligence at Stanford. Robots and intelligent computer systems, he says, "are going to have a far more dramatic impact on the workplace than the internet has".

By absorbing the routine aspects of our jobs, optimists argue, machines are freeing us up for more creative activities
Kaplan isn't alone in this belief. A 2013 study by the Oxford Martin School estimated that 47% of jobs in the US could be susceptible to computerisation over the next two decades. A study by the McKinsey Global Institute predicted that, by 2025, robots could jeopardise between 40m and 75m jobs worldwide.

"There have been two major developments over the past 10 years," says Kaplan. "The first relates to advances in machine learning – the ability to organise large volumes of data so you can get actionable intelligence. The second is the availability of data of all kinds, coming from smartphones and other low-cost sensors out there in the environment. When you add those two things up – the availability of the data along with the ability to interpret it – it enables a whole lot of things that you couldn't do before."

Many areas of manual work are being affected. Robots in factories and warehouses are becoming more mobile, versatile and affordable. A US-designed robot called Baxter, which can handle a wide variety of tasks from loading to packaging, currently costs £19,000. "If you're digging a ditch or painting a house, laying pipes or setting bricks – anything that involves basic hand-eye co-ordination – there will be low-cost, efficient mechanical devices that can do that work," says Kaplan.

It's not just manual labour that's ripe for automation: white-collar jobs are also at risk as software becomes more sophisticated. One example is Quill, a program developed by US company Narrative Science that crunches data and generates reports in a journalistic style.

Data analysis work in areas such as advertising and finance is being outsourced to computers and even the authority of medical experts is being challenged: IBM's Watson computer, which won the American TV quiz Jeopardy in 2011, is being used to diagnose cancer patients in the US.

Watson can sift through symptoms, medical histories and the latest research to deliver diagnoses and suggest potential treatments, but there are limits to its diagnostic abilities and, unlike a human doctor, it cannot treat patients with empathy and understanding.

By absorbing the most routine aspects of our jobs, optimists argue, machines are freeing us up to concentrate on more creative, thoughtful activities. This may be true for some, but, as the Silicon Valley entrepreneur and author Martin Ford says: "The reality is that a very large fraction of our workforce is engaged in activities that are on some level routine, repetitive and predictable." If this is the case, retraining a large portion of the workforce to engage in more creative activity beyond the reach of automation will pose an enormous challenge.

Not all jobs are at risk. "A lot of work involving personal interaction won't be affected," says Kaplan. "Nobody wants to go to a robotic undertaker who says 'I'm sorry for your loss'; it's just not meaningful. But it depends on the activity – the more transactional it is, the more likely it is to be automated. If you go to a fancy restaurant, you don't want a robotic waiter. On the other hand if you go to McDonald's, you won't have a problem with punching buttons and having a burger come out of a chute somewhere."

One issue that will loom ever larger as the incidence of automation increases, according to Kaplan, is inequality. "Automation is fundamentally the substitution of capital for labour. The problem is that the people who already have the capital are the ones who will benefit most, because they're the ones who will invest in the new automation."

Human cloud

Websites that match employers with freelancers are growing fast – and so is the potential for lower wages and inequality

In the past decade cloud computing has radically altered the way we work, but it's the growth of the "human cloud" – a vast global pool of freelancers who are available to work on demand from remote locations on a mind-boggling array of digital tasks – which is really set to shake up the world of work.

analysis:

The past five years have seen a proliferation of online platforms that match employers (known in cloud-speak as “requesters”) with freelancers (often referred to as “taskers”), inviting them to bid for each task. Two of the biggest sites are Amazon’s Mechanical Turk, which lays claim to 500,000 “turkers” from 190 countries at any given time, and Upwork, which estimates that it has 10 million freelancers from 180 countries on its database. They compete for approximately 3m tasks or projects each year, which can range from tagging photos to writing code. The market is evolving so quickly that it’s hard to pin down exactly how many people are using these sites worldwide, but management consultants McKinsey estimate that by 2025 some 540 million workers will have used one of these platforms to find work.

The benefits for companies using these sites are obvious: instant access to a pool of cheap, willing talent, without having to go through lengthy recruitment processes. And no need to pay overheads and holiday or sick pay. For the “taskers” the benefits are less clear cut. Champions of the crowdsourcing model claim that it’s a powerful force for the redistribution of wealth, bringing a fresh stream of income and flexible work into emerging economies such as India and the Philippines (two of the biggest markets for these platforms). But herein lies the problem, as far as critics are concerned. By inviting people to bid for work, sites such as Upwork inevitably trigger a “race to the bottom”, with workers in Mumbai or Manila able to undercut their peers in Geneva or London thanks to their lower living costs.

It’s not just unskilled labour being done online. It’s affecting the whole spectrum
“It’s a factor in driving down real wages and increasing inequality,” says Guy Standing, professor of economics at SOAS, University of London. He has written two books on the “precariat”, which he defines as an emerging global class with no financial security, job stability or prospect of career progression. He argues that falling wages in this sector, with workers often willing to complete tasks for as little as $1 an hour, will eventually have a knock-on effect on the wages of traditional employees and contribute to the growth of the precariat. “And it’s not just unskilled labour that’s being done online,” says Standing. “It goes all the way up: legal services, medical diagnosis, architectural services, accounting – it’s affecting the whole spectrum.”

analysis:

Love it or loathe it, the human cloud is here to stay. “People don’t necessarily want to work from 9am to 5pm in an office any more. They want more flexible work, both in terms of the hours and the location,” says Vassili van der Mersch, founder of Sevendays, a new platform which specialises in matching established freelancers with startups and digital agencies. Unlike the auction model favoured by sites like Upwork, Sevendays invites a carefully selected number of jobseekers to apply for each job and does not take a cut of their earnings. Freelancers can also specify the minimum rate they are prepared to work for.

Van der Mersch argues that there are career development opportunities for cloud workers, with many startups using the site as a way of testing out freelancers to see if they’re a good cultural fit before offering them a permanent job – and vice versa. “Typically these remote freelancers are very entrepreneurial, which is one of the mindsets that startups are looking for,” he says. “They are self-starters and they don’t need someone looking over their shoulder.”

For now this sector of the labour market is largely unregulated but Standing says there is urgent need for an industry code of ethics and low-cost means of redress to protect vulnerable workers. “It’s going to become a very big, explosive issue. In some sectors the use of cloud labour is doubling each year and so far the policymakers haven’t addressed it.[10]

10, Interviews by Killian Fox and Joanne O‘Connor, 11,2015 , Five ways work will change in the future,The Guardian, https://www.theguardian.com/society/2015/nov/29/five-ways-work-will--change-future-of-workplace-ai-cloud-retirement-remote

analysis:

Sectional resume of population and jobs analysis

Deep analysis focused at population and how does the people work showing clear values for further work. Midtown region is strongly filled with office buildings. This fact is declared with low population density ration. Also is one of the expensivest pieces of whole New York City. There are located mainly skylines buildings such as Empire State Building and etc. Fig.15 showing how does the population growing and could have strong impact to future of Manhattan. The Manhattan‘s prediction is milder than the global. Prediction for next few decades countig with few percent rising. The data provided by census for Manhatan are not cleare because they are illustrating only permament residents and not counting with commuters. As was written previous. This is bussiness district and day time population is increasing up to 4 milion people. Than the low density part of the city is becoming the most densest land in the world. Analysis of commuting showing averange commuting time. It is from half to one and half hour per one way. Most of Manhattans work here but the second part of employes is commuting. It causes traffic jams and huge delays. It should be also reason why Manhattan‘s residents prefare working from home. This fact is also prooved by study of future work. Most of the work will be done remotely.

conclusion:

design building suitable for remote work instead of empty office building. This can rise density of population and reduce number of commuters. Try to find way how to maximize use of land.

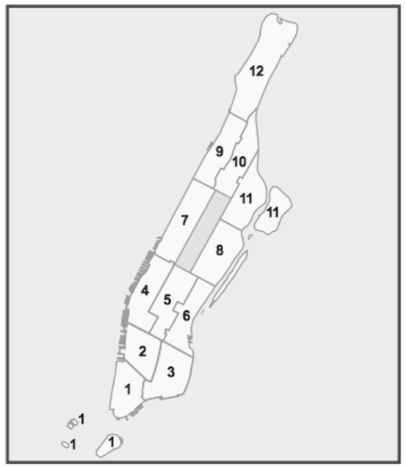
analysis:

Manhattan area

TOTAL POPULATION	2000	2010	2013*
Number	1,537,195	1,585,873	1,626,159
% Change	—	3.2	2.5

*estimate, U.S. Census Bureau

VITAL STATISTICS	2005	2012
Births: Number	19,922	18,977
Rate per 1000	13.0	12.0
Deaths: Number	10,339	9,238
Rate per 1000	6.7	5.8
Infant Mortality: Number	89	—
Rate per 1000	4.5	3.5



INCOME SUPPORT	2005	2014
Cash Assistance (TANF)	65,314	45,301
Supplemental Security Income	79,383	74,629
Medicaid Only	253,195	241,126
Total Persons Assisted	**397,892**	**361,056**
Percent of Population	**25.9**	**22.8**

TOTAL LAND AREA	
Acres:	**14,581.0**
Square Miles:	**22.8**

LAND USE, 2014	Lots	Lot Area Sq. Ft.(000)	%
1 - 2 Family Residential	3,719	6,567.7	1.4
Multi-Family Residential	17,000	110,251.7	23.0
Mixed Resid./Commercial	10,324	64,328.0	13.4
Commercial/Office	5,455	51,439.6	10.7
Industrial	1,026	6,382.7	1.3
Transportation/Utility	494	35,025.5	7.3
Institutions	2,501	56,233.9	11.7
Open Space/Recreation	396	121,081.4	25.2
Parking Facilities	754	6,687.9	1.4
Vacant Land	1,306	15,232.2	3.2
Miscellaneous	182	6,471.4	1.3
Total	**43,157**	**479,702.1**	**100.0**

fig 7, Manhattan area

Manhattan grid

The Commissioners‘ Plan of 1811 was the original design for the streets of Manhattan above Houston Street and below 155th Street, which put in place the rectangular grid plan of streets and lots that has defined Manhattan to this day. It has been called „the single most important document in New York City‘s development, and the plan has been described as encompassing the „republican predilection for control and balance ... distrust of nature. It was described by the Commission that created it as combining „beauty, order and convenience.“

The plan originated when the Common Council of New York City, seeking to provide for the orderly development and sale of the land of Manhattan between 14th Street and Washington Heights, but unable to do so itself for reasons of local politics and objections from property owners, asked the New York State Legislature to step in. The legislature appointed a commission with sweeping powers in 1807, and theivr plan was presented in 1811.[9]

The New York City 1916 Zoning Resolution was a measure adopted primarily to stop massive buildings such as the Equitable Building from preventing light and air from reaching the streets below. It established limits in building massing at certain heights, usually interpreted as a series of setbacks and, while not imposing height limits, restricted towers to a percentage of the lot size. The chief architects of this resolution were George McAneny and Edward M. Bassett.

Architectural delineator Hugh Ferriss popularized these new regulations in 1922 through a series of massing studies, clearly depicting the possible forms and how to maximize building volumes

In 1961 the city reformed its zoning ordinance. The new zoning solution used the Floor Area Ratio (FAR) regulation instead of setback rules. A building’s maximum floor area is regulated according to the ratio that was imposed to the site where the building is located. Another feature of new zoning solution was adjacent public open space. If developers put adjacent public open space to their buildings, they could get additional area for their building as a bonus. This incentive bonus rule

was created because of the strong influence from two representative skyscrapers. The Seagram building by Mies van der Rohe with Philip Johnson, and the Lever House by Skidmore, Owings & Merrill introduced the new ideas about office building with open space. These buildings changed the skyline of New York City with both the advent of simple glass box design and their treatment of adjacent open spaces. The new zoning encouraged privately owned public space to ease the density of the city.[22]

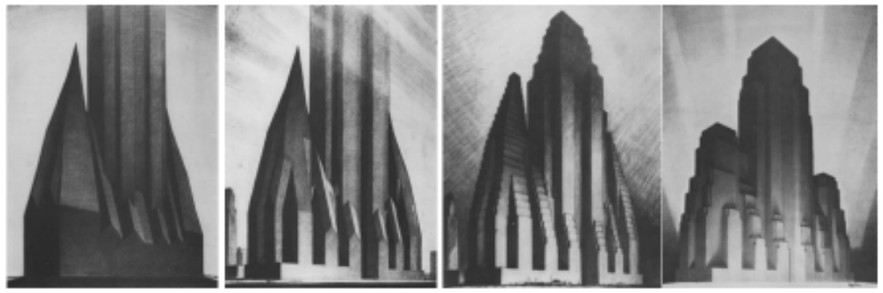


Fig. 16 Hugh Ferrts Study of Maximum Mass Permitted by the 1916

22,Wikipedia, 1916 Ztoning Resolution, https://en.wikipedia.org/wiki/1916_Zoning_Resolution

Construction site: limits C6 location

C6 districts permit a wide range of high-bulk commercial uses requiring a central location. Most C6 districts are in Manhattan, Downtown Brooklyn and Downtown Jamaica; a C6-3D district is mapped in the Civic Center area of the Bronx. Corporate headquarters, large hotels, department stores and entertainment facilities in high-rise mixed buildings are permitted in C6 districts.

C6-1, C6-2 and most C6-3 districts, typically mapped in areas outside central business cores, such as the Lower East Side and Chelsea, have a commercial floor area ratio (FAR) of 6.0; the C6-3D district has an FAR of 9.0. C6-4 through C6-9 districts, typically mapped within the city's major business districts, have a maximum FAR of 10.0 or 15.0, exclusive of any applicable bonus. Floor area may be increased by a bonus for a public plaza or Inclusionary Housing.

C6-2A, C6-3A, C6-3X and C6-4A are contextual districts with maximum building heights. C6-3D and C6-4X districts allow towers above a building base; special rules determine the tower's height and articulation. All other C6 districts allow towers to penetrate a sky exposure plane and do not require a contextual base.

C6 districts are widely mapped within special districts. C6-4.5, C6-5.5, C6-6.5 and C6-7T districts are mapped only within the Special Midtown District and have unique floor area ratios and bonus rules. C6-1G, C6-2G, C6-2M and C6-4M districts are mapped in Chinatown and Chelsea and in the Special Garment Center District, and have rules for the conversion of non-residential space to residential use.

C6 districts are well served by mass transit, and off-street parking is generally not required, except within the C6-3D district.

C6 Commercial Districts

	C6-1	C6-1A	C6-2	C6-2A	C6-3	C6-3A	C6-3D	C6-3X	C6-4	C6-4A	C6-4X	C6-5	C6-6	C6-7	C6-8	C6-9
Commercial FAR	6.0[4]	6.0[4]	6.0[4]	6.0	6.0[4]	6.0	9.0	6.0	10.0[4]	10.0	10.0[4]	10.0[4]	15.0[4]	15.0[4]	10.0[4]	15.0[4]
Residential FAR	0.87–3.44[1]	0.78–2.43[2,3]	0.94–6.02[2,3]	6.02[5]	0.99–7.52[5]	7.52[5]	9.0[5]	9.0	10.0[4,5]	10.0[5]	10.0[5]	10.0[4,5]	10.0[5]	10.0[5]	10.0[4,5]	10.0[5]
Residential District Equivalent	R7	R6	R8	R8A	R9	R9A	R9D	R9X	R10	R10A	R10X	R10	R10	R10	R10	R10

1 *4.0 FAR on wide streets outside the Manhattan Core under Quality Housing Program*
2 *3.0 FAR on wide streets outside the Manhattan Core under Quality Housing Program*
3 *7.2 FAR on wide streets outside the Manhattan Core under Quality Housing Program*
4 *FAR bonus of up to 20% for a public plaza*
5 *Increase in FAR with Inclusionary Housing Program bonus*

fig 5, commercial District table 1.

Special Midtown district

The Special Midtown District (MiD), established to guide development within the Midtown central business district, has three goals: growth, stabilization and preservation. The district was enacted in 1982 to shift future development further to the west and south in response to an over-concentration of development on the east side of Midtown.

The district establishes differing bulk and density limits for avenue frontages and midblocks, and for each of the subdistricts—Fifth Avenue, Grand Central, Penn Center, Preservation and Theater. A floor area bonus for public plazas, subway station improvements or theater rehabilitation is available in some subdistricts. The Preservation Subdistrict is not eligible for any floor area bonuses and its base floor area ratio (FAR) is lower than elsewhere in the special district in order to limit development on certain side streets. Certain urban design features, such as continuity of street wall and retail uses, off-street relocation of subway stairs and provision of on-site pedestrian circulation spaces, are mandated within the district.

The Theatre Subdistrict requires a City Planning Commission special permit for demolition of legitimate theaters that are not designated landmarks. In addition, a floor area bonus is available by special permit for rehabilitation of legitimate theaters. A flexible program for the transfer of development rights preserves landmarked and legitimate theaters and new buildings above a certain size must reserve at least five percent of floor space for entertainment and theater-related uses.

Special use and signage requirements in keeping with the character of the area are applicable in the Fifth Avenue, Penn Center and Theater Subdistricts. Large illuminated signs, for example, must be incorporated into the facades of new buildings to ensure the continued brilliance of the celebrated Great White Way in Times Square. In the Grand Central Subdistrict, special regulations govern transfers of development rights and seek to expand and improve its extensive subsurface pedestrian network. Special use restrictions in the Fifth Avenue Subdistrict reinforce its character as a showcase tourist and shopping destination. Signage regulations enhance the retail uses and transit connections of the Penn Center Subdistrict.[3]

3,NYC gov, 11.2016,C6 commercial District, hhttp://www1.nyc.gov/site/planning/zoning/districts-tools/special-purpose-districts-manhattan.page#midtown

analysis:

Site limits C6 lcation

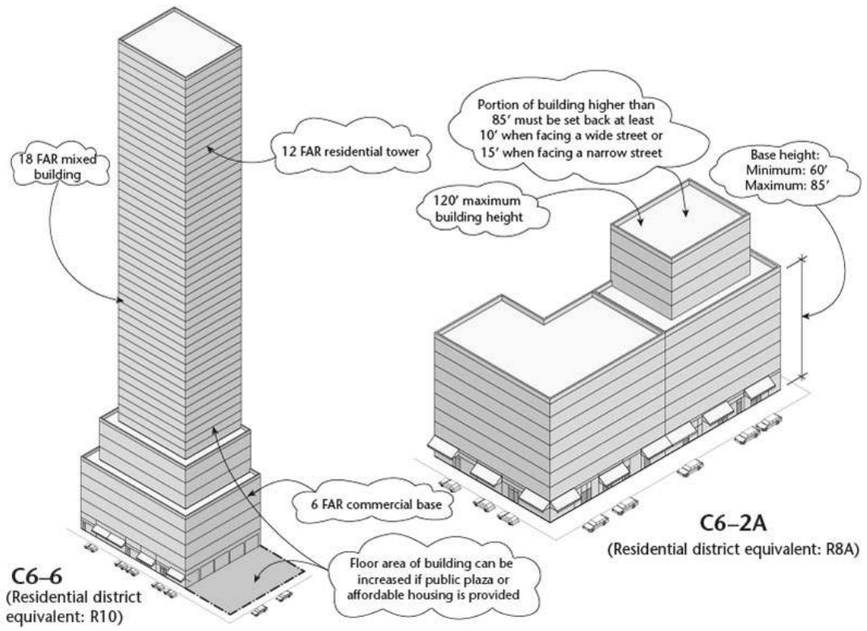


fig 6, commercial District table 2.2

The rest of the restriction with dictionary could be visited here:
http://www1.nyc.gov/site/planning/zoning/glossary.page

analysis:

Towers in New York City

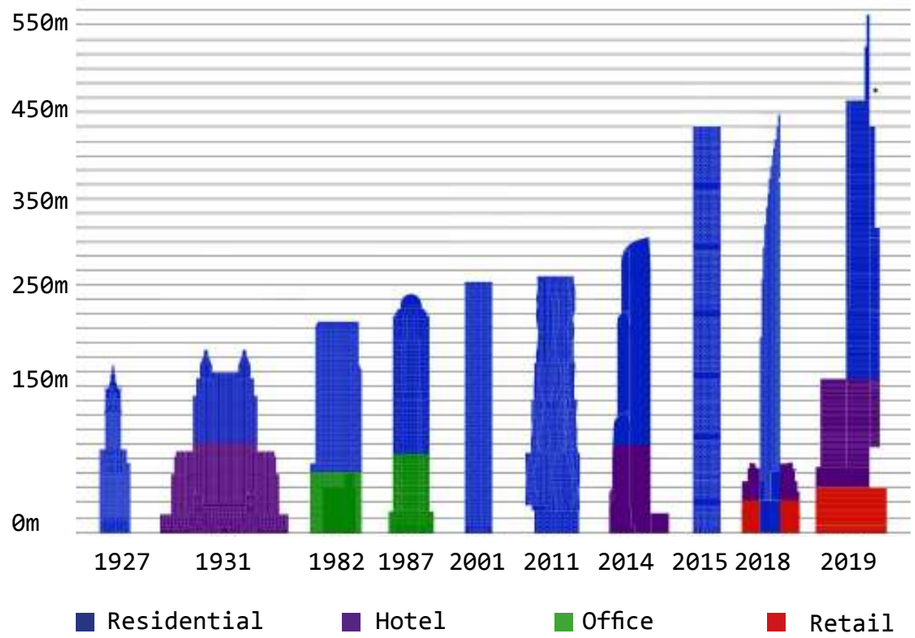


Fig 17, Towers in New York City

Manhattan needs today about 9 milion sqm of office area.

analysis:

8 new projects

Hudson Yards
Height to Tip:
914 ft / 279 m
Highest Occupied: 847 ft / 258 m
Stories / Levels: 70
Expected completion: 2018

fig 18

Central Park towerHei-
Height to Tip:
1,775 ft / 541 m
Highest Occupied:
1,450 ft / 442 m
Stories / Levels: 95
Expected completi
n: 2019

fig 18

30 Park Place
Height to Tip:
937 ft / 286 m
Highest Occupied:
Stories / Levels:
82 / 67
Expected completion:
2016

fig 18

one 57
Height to Tip:
1,004 ft / 306 m
Highest Occupied:
902 ft / 275 m
Stories / Levels:
90 / 75
Completed: 2014

fig 18

analysis:

35 Hudson Yards
Height to Tip:
1,009 ft / 308 m
Highest Occupied:
Stories / Levels:
79 / 70
Expected completion:
2018

fig 18

MoMA Tower
Height to Tip:
1,050 ft / 320 m
Highest Occupied:
Stories / Levels:
82 / 77 fl
Expected completion:
2018

fig 18

432 Park avenue
Height to Tip:
1,396 ft / 426 m
Highest Occupied:
1,287 ft / 392 m
Stories / Levels:
96 / 88
Completed: 2015

fig 18

111 West %&th Street
Height to Tip:
1,438 ft / 438 m
Highest Occupied:
1,134 ft / 346 m
Stories / Levels:
80 / 60
Expected completion:
2018

fig 18

Sectional resume of buildings and restricitons

As was written previous. There are strict restriction for designing buildings. This is also reason why the most of buildings looks similar. But this restriction could be breached due to public good. The main exhample is IBM building build in 1964. Main purpose of these restrictions are keep the same rulles and benefits to all. Streets couldn‘t get dark as it happend in Kowloon city in China. Purpose is keep the fresh air and sun at the streets. Nowdays engineering allows us to use superstrucutres. Building could look different but keep the „public good“. That is the reason why I think that the restriction should be modified. I will try to find different way how to keep public good without strict keeping of this restrictions. One article over is example of the modern buildings which are under construction now or been done. Also the fig 17 showing the progress in constructions. Buildings are higher and higher. Also there is proove of focasing to residential building. Ideal building should fulfill residential and office purpose.

Resume: build office and residential building with new technology and find the way how to keep public good.

A timeline of the modern office

1856

A UK government report on office space layouts says: “for the intellectual work, separate rooms are necessary so that a person who works with his head may not be interrupted; but for the more mechanical work, the working in concert of a number of clerks in the same room under proper superintendence, is the proper mode of meeting it”.

1906

The Larkin Administration Building, the first modern office, designed by Frank Lloyd Wright, opens.

1939

The Johnson Wax company’s open-plan office, designed by Frank Lloyd Wright, opens.

1958

Architect Mies Van Der Rohe designs the Seagram building in New York, the type of workplace now recognised in dramas such as Mad Men.

1960s

The Burolandschaft office landscaping movement emerges.

1980s

Hot-desking, borrowed from hot-bunking where submariners shared their bunks, begins to be used in offices.

1990s

The rise of the ‘office hotel’, where space management is improved and there is a wider range of spaces to work in.

2000s

The barrier-free office comes of age, giving people a variety of places to work.[11]

11, Shane Hickey,8.2015, The history of the office – why open-plan fell out of fashion,https://www.theguardian.com/small-business-network/2015/oct/15/history-office-open-small-business-workplaces

Open space offices or not?

Open space offices are dynamic, without privacy, but useful, because employees create better relationships and work in a team.

The original idea of open space office is designed back in 1950 by a team in Hamburg, who thought that this would ease communication between employees.

Today, about 70% of all working areas adopted this trend, so we assume that it works. But some of the results indicate different. We analyze the problems and advantages – whether open space functions and why some employees still hide behind partitions.

Advantages of open space office

The concept that breaks down the walls in today's workspaces: Open space office should improve workflow and communication. Sounds reasonable? Maybe not.

One article notes that the modern agencies accepted this concept and as advantages they state better communication, collaboration and speed of work and for this reason they suggest to tear down barriers and walls. They also point out that leaders of agencies see positive benefits and increased productivity as a result of this.

But what happens to the privacy and confidential telephone conversations and so on?

Disadvantages of this concept

1. There is no productivity and satisfaction for employees, because of the lack of privacy.

2. There is no space which is really just for them.

3. Different ways of working are not shown and are not recognized.

4. Creativity is forced, because all eyes are on you, and whether this is a good solution?

Employees have complained that they feel too exposed, combined with too much noise, they are not enough concentrated. Because

everyone has its own rhythm. People come to work in in a different time, take a break at different times, want to socialize at different times and are most productive in different periods of the day. Job of management is to adjust all of this and create a space where all these conflicts reconcile.

Everyone seems to have rushed to tear down all the walls in workplaces, but now they want to return some of them. Modern offices are trying to achieve the golden middle through design, without returning all walls. For that reason there is a new concept that has been created in order to find the golden middle. For that reason a new concept has been created.

For example, one Microsoft team decided to have closed and private offices, and when employees needs to cooperate, they just meet in the hallway where they have conversations. When they finish, everybody returns back to their privacy.

On the other hand, instead of the employees meet in the hallways, there are new office concepts that combine comfortable space where employees can sit together and collaborate. This concept is balanced with private telephone rooms and closed spaces for meetings. Indeed, it seems that some walls are essential to modern offices.

Despite all the ups and downs, the trend of open office space, seems to be present in one or another concept.

Those who are currently working in open space offices have learned that it is not always easy, safe and pleasant to work in open space and that everyone looks for a workspace, where they will be able to think, where they do not listen to colleague across the way that phone calls and the like.

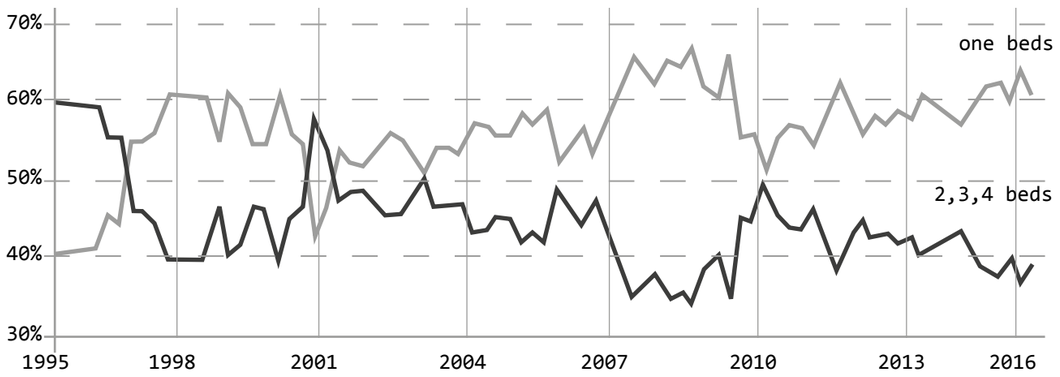
Also, it is sometimes necessary for people to meet and work together, so they could come up with solutions and perform a task easier and better, and this certainly requires a common area. Cooperation is sometimes necessary in business, because the more people, the more skills and ways of thinking.

Yes, this trend will probably remain forever, but some partitions are indeed necessary.[12]

12,unkown author, Advantages and disadvantages of open space offices, http://www.delightoffice.com/advantages-disadvantages-open-space-offices/

analysis:

Manhattan Sales Market by size. 1 bed vs 2,3,4 beds



Manhattan Apartment Averange Sale Size

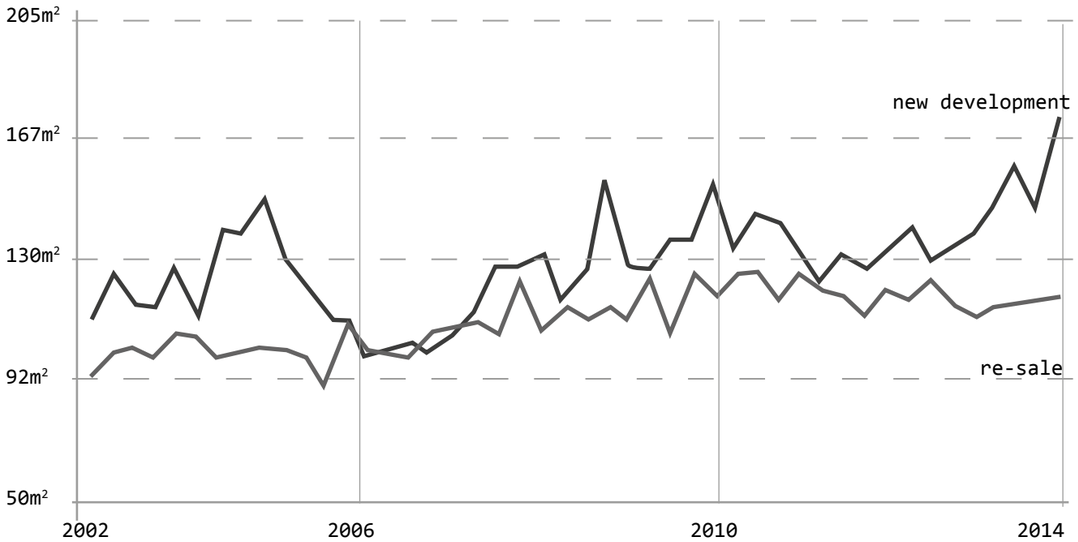


fig 19 Manhattan market

analysis:

Sectional resume of flats and office market

Office market is growing but rapidly changing. Manhattan need news office area but simultaneously have to accept trends in future work like as remote work and other technologies. Second important fact is that the total apartmen area is increasing in new building. But the market showing that the small one bed rooms are selling more and more. It is also proved by fact that the population live in single status and not getting married. This analysis providing contradictory results. Due to this result I decide creat smaller flats which are more suitable for nowdays generation and also for the future generation.

US and global trends in flats

The American dream of a household with 2.5 children, a dog, and a two-car garage is no longer the norm: people are staying single longer, having children later, and opting out of living in the suburbs in favor of moving downtown, as researchers have found. In response to these demographic shifts—and in an effort to create more affordable units—urban housing is getting smaller. Cities like Seattle, San Francisco, and Boston have adopted zoning changes to allow micro-housing, generally studios under 400 square feet.

Nonprofit think tank the Urban Land Institute has just released a new report on the future of micro-housing. Here‘s what to expect from the burgeoning world of compact urban living:

Apartments will be small, but not too small. According to one developer interviewed for the report, the ideal micro-apartment size is between 275 and 300 square feet. In the process of conducting consumer research, this unnamed developer had a grad student live in prototype units of different sizes, and found that that range was the optimum size for a „one person plus dog“ household. It‘s the same size used by New York City‘s pilot micro-housing program, adAPT NYC. In other words, people are willing to deal with Murphy beds and hidden storage, but won‘t go as far to live with a motorhome-style combination bathroom/shower stall.

It won‘t have an oven, but it will have a full-sized refrigerator. American consumers may be ready to live with a little bit less, but haven‘t quite embraced the tiny appliances sold in Europe and Asia, like all-in-one washer-dryer combos. Hotel-sized fridges are a no-go—Americans want a full-height refrigerator. An oven, however, can be sacrificed if there‘s a microwave and convection oven, the report found. As long as the microwave is located above the counter, not below. According to the study, a kitchen between six feet and eight feet in length is ideal.

There will be places to socialize outside your apartment. Most tiny-apartment dwellers are single professionals who are new to the city or launching new careers. „Micro-unit occupants

are described as social animals, but ones who do not want or need to socialize in their units,“ the study points out. In an effort to entice people to downsize (for what is usually a greater price-per-square-foot, though a lower total rent, than other apartments) developers are tossing building amenities into the mix, with spaces like gyms, communal tables, and roof decks.

The Panoramic, San Francisco

Micro-apartments will be convertible. In the U.S., tiny housing units haven‘t yet achieved widespread acceptance, and the legislation allowing them in many cities has only recently been passed. Just in case the trend is a passing fad, developers are hedging their bets on micro-housing, the report found. Many buildings are designed so that micro-housing units can be easily combined into one- or two- bedroom apartments if demand decreases. Load-bearing walls, utilities, and other systems within the building are designed so that side-by-side units can be cheaply converted into bigger apartments.

Promotional video for a development with micro-units in Washington, D.C.

They won‘t be called „micro.“ According to the report, „the term has begun to arouse negative connotations associated with higher density, overcrowding, and transient populations.“ So far, ideas for rebranding the micro-apartment are largely cringeworthy. The report suggests that „innovation units,“ „launch pads,“ and „fun units“ are all viable alternatives.

Perhaps as they become more ubiquitous, they‘ll just be called „apartments.“ A developer in Washington, D.C., for example, has erected two buildings with micro-units in the district that are marketed merely as budget-friendly apartments in great neighborhoods—there is no mention of their exact size on the company‘s website. „We don’t call them micro-units,“ developer Michael Korns of Keener-Squire Properties told the Washington Post last summer. „That’s a trendy name.“[13]

13,Shaunancy Ferro,03.15, 5 Trends That Will Shape The Future Of Tiny Housing, https://www.fastcodesign.com/3041865/slicker-city/5-trends-that-will-shape-the-future-of-tiny-housing

US and global trends in flats

One hundred years in the future, we'll barely have to leave our homes, if the SmartThings Future Living Report is correct. Commissioned by Samsung, the report was authored by space scientist Dr. Maggie Aderin-Pocock, University of Westminster architects and lecturers Arthur Mamou-Mani and Toby Burgess, and urban planner and designer Linda Aitken and Els Leclercq. The writers based their predictions on current technology, as well as projections about the world's population growth and energy needs.
Thanks to an expanding population, Earth-dwellers will need to find new and creative places to live. By 2116, the report proposes that humans will have underwater cities: "With advances in the efficiency of solar cells, it is likely that this free energy source will be used to create sub-aquatic communities, breathing the oxygen they create and fueling their electrical needs through the act of hydrogen creation below the waves." Not everyone with a view of the sea will be below the waves, though. Floating cities will move all over the world to avoid harsh climates. Future generations will also live in earth--scrapers – essentially skyscrapers in reverse, burrowing deep into the ground rather than towering in the clouds.

While the locations of future homes may be totally new, the interiors will be futuristic takes on what we're already used to. Those living underground might not get as much sunlight, but their walls will still offer breathtaking views thanks to virtual reality or LED surfaces and projectors "with home interiors reading and then adapting to the inhabitants' mood."

The walls themselves will be more than stationary surfaces showing you thunderstorms when you're angry and rolling meadows when you're stressed. "These smart walls will be able to change their own shape in 3D by using small responsive actuators pushing and pulling a flexible skin, creating temporary seats or shelves," the authors of the report write.
The house in general will respond to your needs, suggesting different wall configurations based on what's happening (such as if you have guests in town and need a temporary bedroom). And each home will have its own 3D printer to make small objects on demand.
With an increased strain on the earth's resources, homes will become more sustainable. People will grow their own food with hydroponics and produce their own gas and water through a di-

gestion tank using anaerobic digestion. All houses will be "off the grid," storing energy in lithium-ion batteries generated by sun, wind, or other means.
Thanks to drone deliveries, 3D-printed and home-grown food, holograms that project you at an office, and in-home body-scanning capsules that check you for disease, it sounds like the report predicts people will increasingly become homebodies. That might be a necessity if we venture into space. "Homes will increasingly become self-contained, autonomous spaces generating their own oxygen and food; we will effectively all be creating our very own little planet Earths," says the report. [13]

As a good exhample of this idea could be Japan metabolism. Main exhample could be Nakagin Capsule Tower by Kisho Kurokawa. This building is located in Shimbasi, Tokyo, Japan. Building was completed in 1972 and almost been demolished in 2012. Principe of this building is simple. Whole structure is group of 140 capsules use as a apartments. Total are of one unit is only 8,7m^2. Capsules can be connected to each other and expand the total area. Each capsule could be removed and replace by the new one. Nowdays are again already using

14,Jenny McGrath,02.16, In 100 years, humans may live in underwater spheres and subterranean skyscrapers, http://www.digitaltrends.com/home/smartthings-future-living-report-on-how-homes-will-look-in-100-years/

15,Wikipedia.org,02.16, Nakagin Capsule Tower, https://en.wikipedia.org/wiki/Nakagin_Capsule_Tower

Ikea predictiont

There‘s a good chance that Marcus Engman is directly responsible for at least one piece of furniture in your house—and if you‘re a millennial, maybe all of it. As head of design for Ikea Sweden, Engman‘s job is to oversee the design of new furniture and housewares that then winds up in the hands of millions of customers each year. Here, Engman predicts everything from the future of flat-pack furniture to the weird-feeling fabrics people will want to start touching to offset a world full of glass screens.

THE FLUID HOME

GoodMood Photo via Shutterstock
Traditionally, when people thought of their houses, they thought of them almost mathematically. A sofa + a television = a living room. A bed + a set of drawers = a bedroom. But in a constantly urbanizing world, where more people are living in smaller spaces (by 2017, the World Health Organization predicts the majority of people will live in more tightly packed urban areas), what makes one room a living room and another room a bedroom is becoming a lot more fluid.

Pretty soon, a stool might be one of the most important pieces of furniture in your house.

Furniture is going to have to evolve to keep pace. Take the sofa, Engman says. In the past, a sofa was the most important piece of furniture in the living room, and consequently the home. But that‘s already changing. The sofa isn‘t just for socializing anymore: people eat on their sofa, and in small apartments, they might even use it as their bed. As for pointing your sofa at a television, in a cord-cutting world, there‘s no need for that.

„We‘re already seeing a lot more people buying day beds instead of sofas,“ Engman says. „That‘s fluid home thinking.“ And Engman expects the trend to continue, predicting that the table—not the sofa—will soon become the most important piece of furniture in most people‘s homes: a multi-use piece of furniture you can work, eat, play, and socialize around.

FURNITURE THAT DOES MORE

Flickr user hobvias sudoneighm
In a rapidly urbanizing world, people will have to make do with smaller spaces, and less furniture overall. As a result, Engman says, the furniture in our homes is going to become more versatile. „It‘s possible that pretty soon, a stool might be one of the most important pieces of furniture in your house, because it can do just so many things besides be a stool,“ he says. „You can use it as a bedside table, a seat, an end table, or a step ladder, and you can easily design them to be nestable, so many stools can be stacked on top of each other when they‘re not in use.“

THE DEATH OF STORAGE

Flickr user Jonathan Lin
The history of the home is synonymous with the history of storage. You‘ve got chests of drawers, armoires, cabinets, rec centers, bookshelves, CD shelves, and more. But that‘s all changing. „There‘s so much less to store,“ Engman says. People don‘t have room for storage in an urbanizing world. And many of the things they used to store, like music, movies, and books, now live almost exclusively in the cloud. Our houses will be less cluttered with things, but the things we have, we‘ll want to display.

People will always want to collect physical objects, as a way of showing who they are, Engman says. „People want to show off their collections, not hide them away,“ he says, so storage methods will have to evolve to keep up. Like displays in the museum of your home, they need to be just as functional as they are exhibitionist. Think more open shelves and glass cabinets that allow you to show off your collection, instead of chests and drawers.

SMARTER FURNITURE

IKEA
Earlier this month, Ikea announced a line of new lamps that could wirelessly charge your gadgets, provided they support the Qi wireless charging standard. That‘s just the first baby step of where Ikea sees furniture going. The Swedish furniture maker believes that furniture could one-day be as synonymous with silicon as home electronics are.

That‘s not to say Ikea wants to become a gadget maker. „Our mission isn‘t to sell electronics, but to figure out how to make life at home smarter and easier,“ Engman says. One day, people could be just as excited and curious to download an update that adds new features to their smart appliances as they are to download the latest version of iOS, he says. Ikea plans to show off a conceptual Ikea kitchen in Milan next month at the Salone del Mobile.

FLAT DESIGN COMES TO FURNITURE PACKAGING

Self-Assembly Lab, MIT, Christopher Guberan, Product Designer, Erik Demaine, MIT CSAIL, Carbitex LLC, Autodesk Inc.
Ikea is synonymous with flat-pack furniture, but Engman says, „We‘re always on the lookout to pack things flatter. It just doesn‘t make sense to mail air all around the world, or even around the country. It‘s just not sustainable, and it makes furniture more expensive than it needs to be.“

In the next five years, Engman expects that Ikea and its competitors will figure out ways to package furniture flatter than ever, which will in turn make it cheaper to buy because of reduced transportation costs. Asked if he has heard of MIT‘s project to create programmable 4-D materials that can bend into shape in response to heat or water—potentially allowing brands like Ikea to ship flat-pack furniture that doesn‘t need to be constructed—Engman wouldn‘t comment directly, but said the company is constantly „looking at new material innovations“ for the future. However it‘s done, the furniture of the future is flatter.

PERSONALIZATION

Furniture is key to expressing personality. But one-off furniture is expensive and takes time to create. Engman says that the next big frontier in furniture design is to figure out personalization on a mass-industrialized scale. For example, when Ikea makes ceramic plates, around 20% are currently being discarded because of some small variation in the way air flows through the ovens as they bake. „So what if we took those 20%, and instead of saying they were mass-production failures, measured their success in their uniqueness?“ Engman asks.

Engman admits that personalizing mass-produced home furnishings is a major challenge, and even five or 10 years won‘t be enough to fully figure it out. „But personally,“ he says,“ I think this

is one of the most interesting and promising areas to explore.“ If Ikea succeeds, it means that cheap, custom furnishings will be available to everyone.

WEIRD FABRICS, STRANGE SENSATIONS

Andrii Muzyka via Shutterstock
„People spend most of their time touching screens,“ Engman says. It‘s boring, and not what people want. According to Engman, the near future of the home is a tactile one, filled with weird fabrics and materials that have been custom-designed as a contrast to the smartphone and tablet screens we spend most of our days touching with our fingertips.[16]

16, John Brownlee, 03.16,Ikea 7 Predictions For What Your Home Will Look like in 2020 ‚https://www.fastcodesign.com/3043407/tech-forecast/ikea-on-7-predictions-for-what-your-home-will-look-like-in-2020

Sectional resume of flats and future

Global habbits are changing and technology is developing each day. Future apartmen should be small and effective with modifiable exuipment. The trends are personalise it, minimalize it. Final result in next decade should be small, modifiable, inteligent flat.

How the human will look in next decades? Prediction by Ray Kurzweill

Singularity is near. The natural progression of human evolution with a just little twist – technology. In other words, super intelligence will soon become a part of our daily lives and man will be merged with machine.

Sure it sounds wild, but just think about what we have been able to achieve over the past 50 years alone. We've come a long way from colorless television sets and sending white guys to the moon. These days we're launching rovers to Mars and 3D printing sh*t out. Now that's a leap.

Just look how addictive consumer behavior is for a new Apple product. Sure you can cop the latest iPhone or Mac, but the newer and improved version will always be released in the next couple of months. Similarly, all technology will keep replacing itself at a faster and faster rate until it all becomes a blur. Everything is becoming more efficient and compact and we can expect to see this trend continue until it isn't even tangible.

Is it that crazy to assume that technological advances will not only continue, but grow and flourish exponentially over the next 50 years? Have you even stopped to think how crazy Google Glass actually is? Or even self-driving cars?

We are at the forefront of the tech revolution. And we need not look further than Dr. Raymond Kurzweil, who is leading the way. His insight into what will happen to us over the course of the next half century are humbling to say the least.

Colonize the moon

The LCROSS probe discovered the equivalent of a dozen 2-gallon buckets of water in the form of ice, in a crater at the lunar south pole. Scientists figure there's more where that came from.

"The presence of significant quantities of ice on the lunar surface catapults the moon from an interesting waypoint to a critical launching pad for humanity's exploration of the cosmos," said Peter Diamandis, CEO and chairman of the X Prize Foundation, which is running a $30 million contest for private moon rovers. "We're entering a new era of lunar exploration? 'Moon 2.0,' in which an international group of companies and

governments will use the ice and other unique resources of the moon to help us expand the sphere of human influence, and to help us monitor and protect the Earth.”

Reverse engineer your brain

Think Exponentially – As a result of technology in 50 years being 1MX more powerful than the technology we use today, there will be a billionfold increase of high performance in computing. We will be able to reverse engineer the human brain, which means combining yourself with machine and finally becoming the perfect you.

Eat all you want without getting fat

Do you have trouble sticking to a diet? Have patience. Within 10 years, Dr. Kurzweil explained, there will be a drug that lets you eat whatever you want without gaining weight. He said our ability to manipulate genes holds massive promise and pointed to scientists already having re-engineered a gene that controls obesity in rats. These genetically modified rats were then able to eat and eat and never gain weight.

“That’s just one of the 23,000 genes we’d like to go about changing,” he said. Kurzweil referred to the human gene as software and said “We’re walking around with out-dated software in our bodies.” There’s no question that breakthroughs in genetic engineering will help us treat or eliminate a whole range of diseases.

Go on quantum computers

The revolution of the computer brings us the quantum computer, which has been making progress and is estimated to hit the market in about 10 to 15 years. There are still some issues with keeping the system isolated, which is necessary for a quantum computer, but we’re getting there. Also, keep in mind that a quantum computer could factor a large digit number in minutes to hours versus what could take a regular computer months to years.

With the advent of the quantum computer, new security measures will have to be taken on computers since these things can

crack a password in almost no time at all. Codes for missile launches would have to continuously change. This thing has some sinister implications for national security, but has many benefits. Computing power continues to increase and in very short durations.

Never be alone again

With technology allowing for smaller and smaller surveillance devices from Drones the size of fireflies and security cameras accessible through mobile devices. The more eyes there are on us, the less we’re going to be able to get away with.

Store all memories and knowledge in your hard drive

Memories last a lifetime, but with devices like Google Glass, pictures are no longer the only things that can immortalize you. Storage drives will accompany you for the rest of your life, which will allow you to run the highlight reel anytime you desire.

Install computers into your blood stream

With computerized devices already small enough to fit inside of our bodies that battle Parkinson’s diseases, technology will soon be inside of our blood stream. Technology is shrinking at an exponential rate, which is measured at about 100 in 3D volume per decade. At that rate, we will be able to introduce blood cell-sized devices that are robotic and have computers that can communicate wirelessly by the 2030s.

Get your complete genetic code to get custom-made medicine

Get your complete genetic code analyzed, so that the doctors can give you custom-made medications for what ails you (or what might have ailed you without the drugs). That growing database could lead to the development of new drugs – for example, vaccines that mimic natural immunity to Lassa fever, or malaria or AIDS. And many dream of a day when doctors will analyze your own personal genome, identifying tailor-made therapies or risk factors you will have to watch out for.

Live forever – man and machine will merge

“I and many other scientists now believe that in around 20 years we will have the means to reprogram our bodies’ stone-age software so nanotechnology will let us live for ever,” wrote Kurzweil.

If Kurzweil is right, nanobots will improve human physiology in just about every way. His hypothesis states that technology will make us all athletes and geniuses. Not only will we live forever, but we will also live much better lives.

Stem cell research has made some great progress and there could be a way to even decrease cell deterioration so that we can extend our life-spans. Stem cells are a great prospect for the foreseeable future and will make transplants obsolete as well as many other benefits. Expect a cure for cancer.[17]

The Age of Spiritual Machines (1999)

This section cites its sources but does not provide page references. You can help to improve it by introducing citations that are more precise. (July 2016) (Learn how and when to remove this template message)

2009

Most books will be read on screens rather than paper.
Most text will be created using speech recognition technology.
Intelligent roads and driverless cars will be in use, mostly on highways.
People use personal computers the size of rings, pins, credit cards and books.
Personal worn computers provide monitoring of body functions, automated identity and directions for navigation.
Cables are disappearing. Computer peripherals use wireless communication.
Main topics from the book: The Age of Spiritual Machines written by Ray Kurzweill
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17, socienty 2045, 10.2013,The 10 Things Technology Will Allow You To Do In The Next 50 Years,http://2045.com/news/31524.html

People use personal computers the size of rings, pins, credit cards and books.
Personal worn computers provide monitoring of body functions, automated identity and directions for navigation.
Cables are disappearing. Computer peripherals use wireless communication.

People can talk to their computer to give commands.
Computer displays built into eyeglasses for augmented reality are used.

Computers can recognize their owner‘s face from a picture or video.

Three-dimensional chips are commonly used.
Sound producing speakers are being replaced with very small chip-based devices that can place high resolution sound anywhere in three-dimensional space.

A $1,000 computer can perform a trillion calculations per second.

There is increasing interest in massively parallel neural nets, genetic algorithms and other forms of „chaotic“ or complexity theory computing.

Research has been initiated on reverse engineering the brain through both destructive and non-invasive scans.

Autonomous nano-engineered machines have been demonstrated and include their own computational controls.

2019

The computational capacity of a $4,000 computing device (in 1999 dollars) is approximately equal to the computational capability of the human brain (20 quadrillion calculations per second).

The summed computational powers of all computers is comparable to the total brainpower of the human race.
Computers are embedded everywhere in the environment (inside of furniture, jewelry, walls, clothing, etc.).

People experience 3-D virtual reality through glasses and contact lenses that beam images directly to their retinas (reti-

nal display). Coupled with an auditory source (headphones), users can remotely communicate with other people and access the Internet.

These special glasses and contact lenses can deliver „augmented reality“ and „virtual reality“ in three different ways. First, they can project „heads-up-displays“ (HUDs) across the user‘s field of vision, superimposing images that stay in place in the environment regardless of the user‘s perspective or orientation. Second, virtual objects or people could be rendered in fixed locations by the glasses, so when the user‘s eyes look elsewhere, the objects appear to stay in their places. Third, the devices could block out the „real“ world entirely and fully immerse the user in a virtual reality environment.
People communicate with their computers via two-way speech and gestures instead of with keyboards. Furthermore, most of this interaction occurs through computerized assistants with different personalities that the user can select or customize. Dealing with computers thus becomes more and more like dealing with a human being.

Most business transactions or information inquiries involve dealing with a simulated person.

Most people own more than one PC, though the concept of what a „computer“ is has changed considerably: Computers are no longer limited in design to laptops or CPUs contained in a large box connected to a monitor. Instead, devices with computer capabilities come in all sorts of unexpected shapes and sizes. Cables connecting computers and peripherals have almost completely disappeared.

Rotating computer hard drives are no longer used.
Three-dimensional nanotube lattices are the dominant computing substrate.

Massively parallel neural nets and genetic algorithms are in wide use.

Destructive scans of the brain and noninvasive brain scans have allowed scientists to understand the brain much better. The algorithms that allow the relatively small genetic code of the brain to construct a much more complex organ are being transferred into computer neural nets.
Pinhead-sized cameras are everywhere.

Nanotechnology is more capable and is in use for specialized applications, yet it has not yet made it into the mainstream. „Nanoengineered machines“ begin to be used in manufacturing.
Thin, lightweight, handheld displays with very high resolutions are the preferred means for viewing documents. The aforementioned computer eyeglasses and contact lenses are also used for this same purpose, and all download the information wirelessly.

Computers have made paper books and documents almost completely obsolete.

Most learning is accomplished through intelligent, adaptive courseware presented by computer-simulated teachers. In the learning process, human adults fill the counselor and mentor roles instead of being academic instructors. These assistants are often not physically present, and help students remotely. Students still learn together and socialize, though this is often done remotely via computers.

All students have access to computers.

Most human workers spend the majority of their time acquiring new skills and knowledge.

Blind people wear special glasses that interpret the real world for them through speech. Sighted people also use these glasses to amplify their own abilities.

Retinal and neural implants also exist, but are in limited use because they are less useful.

Deaf people use special glasses that convert speech into text or signs, and music into images or tactile sensations. Cochlear and other implants are also widely used.

People with spinal cord injuries can walk and climb steps using computer-controlled nerve stimulation and exoskeletal robotic walkers.

Computers are also found inside of some humans in the form of cybernetic implants. These are most commonly used by disabled people to regain normal physical faculties (e.g. Retinal implants allow the blind to see and spinal implants coupled with mechanical legs allow the paralyzed to walk).

analysis:

Language translating machines are of much higher quality, and are routinely used in conversations.

Effective language technologies (natural language processing, speech recognition, speech synthesis) exist
Access to the Internet is completely wireless and provided by wearable or implanted computers.

People are able to wirelessly access the Internet at all times from almost anywhere.

Devices that deliver sensations to the skin surface of their users (e.g. tight body suits and gloves) are also sometimes used in virtual reality to complete the experience. „Virtual sex“—in which two people are able to have sex with each other through virtual reality, or in which a human can have sex with a „simulated“ partner that only exists on a computer—becomes a reality.

Just as visual- and auditory virtual reality have come of age, haptic technology has fully matured and is completely convincing, yet requires the user to enter a V.R. booth. It is commonly used for computer sex and remote medical examinations. It is the preferred sexual medium since it is safe and enhances the experience.

Worldwide economic growth has continued. There has not been a global economic collapse.

The vast majority of business interactions occur between humans and simulated retailers, or between a human‘s virtual personal assistant and a simulated retailer.

Household robots are ubiquitous and reliable.

Computers do most of the vehicle driving—-humans are in fact prohibited from driving on highways unassisted. Furthermore, when humans do take over the wheel, the onboard computer system constantly monitors their actions and takes control whenever the human drives recklessly. As a result, there are very few transportation accidents.

Most roads now have automated driving systems—networks of monitoring and communication devices that allow computer-controlled automobiles to safely navigate.

analysis:

Prototype personal flying vehicles using microflaps exist. They are also primarily computer-controlled.

Humans are beginning to have deep relationships with automated personalities, which hold some advantages over human partners. The depth of some computer personalities convinces some people that they should be accorded more rights.

While a growing number of humans believe that their computers and the simulated personalities they interact with are intelligent to the point of human-level consciousness, experts dismiss the possibility that any could pass the Turing Test. Human-robot relationships begin as simulated personalities become more convincing.

Interaction with virtual personalities becomes a primary interface

Public places and workplaces are ubiquitously monitored to prevent violence and all actions are recorded permanently. Personal privacy is a major political issue, and some people protect themselves with unbreakable computer codes.

The basic needs of the underclass are met. (Not specified if this pertains only to the developed world or to all countries) Virtual artists—creative computers capable of making their own art and music—emerge in all fields of the arts.

2029

A $1,000 personal computer is 1,000 times more powerful than the human brain.

The vast majority of computation is done by computers and not by human brains.

Further progress has been made in understanding the secrets of the human brain. Hundreds of distinct sub-regions with specialized functions have been identified. Some of the algorithms that code for development of these regions have been deciphered and incorporated into neural net computers.

Massively parallel neural nets, which are constructed through reverse-engineering the human brain, are in common use.

analysis:

The eyeglasses and headphones that used to deliver virtual reality are now obsolete thanks to computer implants that go into the eyes and ears. The implants are either permanent or removable. They allow direct interface with computers, communications and Internet-based applications. The implants are also capable of recording what the user sees and hears.

Computer implants designed for direct connection to the brain are also available. They are capable of augmenting natural senses and of enhancing higher brain functions like memory, learning speed and overall intelligence.

Computers are now capable of learning and creating new knowledge entirely on their own and with no human help. By scanning the enormous content of the Internet, some computers „know“ literally every single piece of public information (every scientific discovery, every book and movie, every public statement, etc.) generated by human beings.

Direct brain implants allow users to enter full-immersion virtual reality—with complete sensory stimulation—without any external equipment. People can have their minds in a totally different place at any moment. This technology is in widespread use.

Most communication occurs between humans and machines as opposed to human-to-human.

The manufacturing, agricultural and transportation sectors of the economy are almost entirely automated and employ very few humans. Across the world, poverty, war and disease are almost nonexistent thanks to technology alleviating want.

The rise of Artificial Intelligence creates a real „robot rights“ movement, and there is open, public debate over what sorts of civil rights and legal protections machines should have. The existence of humans with heavy levels of cybernetic augmentation and of larger numbers of other people with less extreme cybernetic implants lead to further arguments over what constitutes a „human being.“

Although computers routinely pass the Turing Test, controversy still persists over whether machines are as intelligent as humans in all areas.

analysis:

Artificial Intelligences claim to be conscious and openly petition for recognition of the fact. Most people admit and accept this new truth.

Reverse engineering of the human brain completed
Non-biological intelligence combines the subtlety and pattern recognition strength of human intelligence, with the speed, memory, and knowledge sharing of machine intelligence
Non-biological intelligence will continue to grow exponentially whereas biological intelligence is effectively fixed in its rate of growth

2049

Food is commonly „assembled“ by nanomachines. This food is externally indistinguishable from „natural“ food, but it can be made more wholesome since production can be controlled at the molecular level. This technology decouples food production from climate conditions and the availability of natural resources.

The distinction between virtual reality and „real“ reality becomes confounded as foglets come into common use, allowing immediate assembly or disassembly of all sorts of physical objects.

2072

Picoengineering (technology on the scale of trillionths of a meter) becomes practical.

2099

The human brain has been completely reverse engineered and all aspects of its functioning are understood.
Natural human thinking possesses no advantages over computer minds.

Machines have attained equal legal status with humans.
Humans and machines merge in the physical and mental realms.
Cybernetic brain implants enable humans to fuse their minds with AI‘s.

In consequence, clear distinctions between humans and machines no longer exist.

analysis:

Most conscious beings lack a permanent physical form.

The vast majority of the Earth‘s sentient beings are AI‘s that exist entirely as thinking computer programs capable of instantly moving from one computer to another across the Internet (or whatever equivalent exists in 2099). These computer-based beings are capable of manifesting themselves at will in the physical world by creating or taking over robotic bodies, with individual AI‘s also being capable of controlling multiple bodies at once.

Individual beings merge and separate constantly, making it impossible to determine how many “people” there are on Earth. This new plasticity of consciousness and ability for beings to join minds seriously alters the nature of self-identity.

The majority of interpersonal interactions occur in virtual environments. Actually having two people physically meet in the real world to have a conversation or transact business without any technological interference is very rare.

Organic human beings are a small minority of the intelligent life forms on Earth. Even among the remaining Homo sapiens, the use of computerized implants that heavily augment normal abilities is ubiquitous and accepted as normal. The small fraction of humans who opt to remain „natural“ and unmodified effectively exist on a lower and more limited plane of consciousness from everyone else, and thus find it impossible to fully interact with AI‘s and highly modified humans.

„Natural“ humans are protected from extermination. In spite of their shortcomings and frailties, humans are respected by AI‘s for giving rise to the machines.

Since knowledge and skills can be instantly downloaded and comprehended by most intelligent beings, the process of learning is compressed into an instantaneous affair instead of the years-long struggle normal humans experience. Free from this time-consuming burden, AI‘s now focus their energies on making new discoveries and contributions.

AI‘s are capable of dividing their attention and energies in countless directions, allowing one being to manage a multitude of endeavors simultaneously.

analysis:

Femtoengineering (engineering on the scale of one thousandth of a trillionth of a meter) might be possible.

AI‘s communicate via a shared electronic language.

Artwork and music created by machines encompasses areas of the light spectrum and frequencies of sounds that normal humans cannot perceive.

Money has deflated in value, meaning all sorts of goods and services have become cheaper.

Some humans at least as old as the Baby Boomers are still alive and well.

Computer viruses are a major threat since most intelligent beings are software-based.

AI‘s frequently make „backup copies“ of themselves, guaranteeing a sort of immortality should the original AI be killed. The concept of „life expectancy“ has become irrelevant to humans and machines thanks to medical immortality and advanced computers.

The pace of technological change continues to accelerate as the 22nd century nears.

Thousands of years from now

„Intelligent beings consider the fate of all the Universe.“

Second important books is: The Singularity is Near

2010

Supercomputers will have the same raw computing power as human brains, though the software to emulate human thinking on those computers does not yet exist. (IBM Sequoia)
Computers will start to disappear as distinct physical objects, meaning many will have nontraditional shapes or will be embedded in clothing and everyday objects.
Full-immersion audio-visual virtual reality will exist.

2010
The decade in which „Bridge Two“, the revolution in Genetics/ Biotechnology, is to reach its peak. During the 2020s, humans will have the means of changing their genes; not just „designer babies“ will be feasible, but designer baby boomers through the rejuvenation of all of one‘s body‘s tissues and organs by transforming one‘s skin cells into youthful versions of every other cell type. People will be able to „reprogram“ their own biochemistry away from disease and aging, radically extending life expectancy.

Computers become smaller and increasingly integrated into everyday life.

More and more computer devices will be used as miniature web servers, and more will have their resources pooled for computation.

High-quality broadband Internet access will become available almost everywhere.

Eyeglasses that beam images onto the users‘ retinas to produce virtual reality will be developed. They will also come with speakers or headphone attachments that will complete the experience with sounds. These eyeglasses will become a new medium for advertising which will be wirelessly transmitted to them as one walks by various business establishments. This was fictionalized in Dennō Coil.

The VR glasses will also have built-in computers featuring „virtual assistant“ programs that can help the user with various daily tasks.

Virtual assistants would be capable of multiple functions. One useful function would be real-time language translation in which words spoken in a foreign language would be translated into text that would appear as subtitles to a user wearing the glasses.

Cell phones will be built into clothing and will be able to project sounds directly into the ears of their users.

Advertisements will utilize a new technology whereby two ultrasonic beams can be targeted to intersect at a specific point, delivering a localized sound message that only a single person

can hear.
2015
By now, it is likely that „clean a house“ will be within the capabilities of a household robot.

2018

1013 bits (=10 TB) of computer memory—roughly the equivalent of the memory space in a single human brain—will cost $1000. (2016 Seagate 10TB)

2020s

The decade in which „Bridge Three“, the revolution in Nanotechnology, is to begin: allowing humans to vastly overcome the inherent limitations of biology, as no matter how much humanity fine-tunes their biology, they will never be as capable otherwise. This decade also marks the revolution in Robotics (Strong AI), as an AI is expected to pass the Turing test by the last year of the decade (2029), meaning it can pass for a human being (though the first A.I. is likely to be the equivalent of an average, educated human). What follows then will be an era of consolidation in which nonbiological intelligence will undergo exponential growth (Runaway AI), eventually leading to the extraordinary expansion contemplated by the Singularity, in which human intelligence is multiplied by billions by the mid-2040s.

Early in this decade, humanity will have the requisite hardware to emulate human intelligence within a $1000 personal computer, followed shortly by effective software models of human intelligence toward the middle of the decade: this will be enabled through the continuing exponential growth of brain-scanning technology, which is doubling in bandwidth, temporal and spatial resolution every year, and will be greatly amplified with nanotechnology, allowing us to have a detailed understanding of all the regions of the human brain and to aid in developing human-level machine intelligence by the end of this decade.

Computers less than 100 nm in size will be possible.
As one of their first practical applications, nanomachines are used for medical purposes.
Highly advanced medical nanobots will perform detailed brain-scans on live patients.
Accurate computer simulations of the entire human brain will

exist due to these hyperaccurate brainscans, and the workings of the brain will be understood.

Nanobots capable of entering the bloodstream to „feed“ cells and extract waste will exist (though not necessarily be in wide use) by the end of this decade. They will make the normal mode of human food consumption obsolete.

By the late 2020s, nanotech-based manufacturing will be in widespread use, radically altering the economy as all sorts of products can suddenly be produced for a fraction of their traditional-manufacture costs. The true cost of any product is now the amount it takes to download the design schematics. By the later part of this decade, virtual reality will be so high-quality that it will be indistinguishable from real reality.

The threat posed by genetically engineered pathogens permanently dissipates by the end of this decade as medical nanobots—infinitely more durable, intelligent and capable than any microorganism—become sufficiently advanced.

The many variations of „Human Body 2.0“ (as Kurzweil calls it) are incrementally accumulated into this and the following decade, with each organ and body system having its own course of refinement and development. It ultimately consists of a nanotechnological system of nourishment and circulation, obsolescing many internal organs, brain-extension and an improved skeleton.

2023

1016 calculations per second—roughly the equivalent of one human brain—will cost $1,000

2025

The most likely year for the debut of advanced nanotechnology. Some military UAVs and land vehicles will be 100% computer-controlled.

2030s
Mind uploading becomes successful and perfected by the end of this decade as humans become software-based: living out on the Web, projecting bodies whenever they want or need (whether in

virtual or real reality), and living indefinitely so long as they maintain their „mind file“. Eventually, all human beings (including those with transbiological 2.0 or 3.0 bodies) will migrate to this postbiological state except for those who wish to remain unenhanced: the transbiological era giving way to the postbiological era.

Nanomachines could be directly inserted into the brain and could interact with brain cells to totally control incoming and outgoing signals. As a result, truly full-immersion virtual reality could be generated without the need for any external equipment. Afferent nerve pathways could be blocked, totally cancelling out the „real“ world and leaving the user with only the desired virtual experience.

Brain nanobots could also elicit emotional responses from users.

Using brain nanobots, recorded or real-time brain transmissions of a person‘s daily life known as „experience beamers“ will be available for other people to remotely experience. This is very similar to how the characters in Being John Malkovich were able to enter the mind of Malkovich and see the world through his eyes.

Recreational uses aside, nanomachines in peoples‘ brains will allow them to greatly expand their cognitive, memory and sensory capabilities, to directly interface with computers, and to „telepathically“ communicate with other, similarly augmented humans via wireless networks.
The same nanotechnology should also allow people to alter the neural connections within their brains, changing the underlying basis for the person‘s intelligence, memories and personality.

The many variations of „Human Body 3.0“ are gradually implemented during this and the following decade; It most likely lacks a fixed, corporeal form and can alter its shape and external appearance at will via foglet-like nanotechnology.

2040s

People spend most of their time in full-immersion virtual reality (Kurzweil has cited The Matrix as a good example of what the advanced virtual worlds will be like, without the dystopian twist).

Foglets are in use.
Nonbiological intelligence will be billions of times more capable than biological intelligence.

2045: The Singularity

$1000 buys a computer a billion times more intelligent than every human combined. This means that average and even low-end computers are vastly smarter than even highly intelligent, unenhanced humans.
The technological singularity occurs as artificial intelligences surpass human beings as the smartest and most capable life forms on the Earth. Technological development is taken over by the machines, who can think, act and communicate so quickly that normal humans cannot even comprehend what is going on. The machines enter into a „runaway reaction“ of self-improvement cycles, with each new generation of A.I.s appearing faster and faster. From this point onwards, technological advancement is explosive, under the control of the machines, and thus cannot be accurately predicted (hence the term „Singularity“).
The Singularity is an extremely disruptive, world-altering event that forever changes the course of human history. The extermination of humanity by violent machines is unlikely (though not impossible) because sharp distinctions between man and machine will no longer exist thanks to the existence of cybernetically enhanced humans and uploaded humans.

Post-2045: „Waking up“ the Universe

The physical bottom limit to how small computer transistors (or other equivalent, albeit more effective components, such as memristors integrated into Crossbar latches) can be shrunk is reached. From this moment onwards, computers can only be made more powerful if they are made larger in size.
Because of this, A.I.s convert more and more of the Earth‘s matter into engineered, computational substrate capable of supporting more A.I.s. until the whole Earth is one, gigantic computer, except for a few nature reserves set aside on the planetary surface for those humans who decided to remain in their natural state. „MOSH‘s“ (Mostly Original Substrate Human) who choose to remain purely organic would still possess virtual assistants that will act as their transcendent servants, living in the blurred real world („foglet-reality“) and being provided with environments and everything they could possibly need as they live out the rest of their normal lives

unless they enhance themselves.

At this point, the only possible way to increase the intelligence of the machines any farther is to begin converting all of the matter and energy in the universe into similar massive computers. A.I.s radiate outward from Earth, first into the Solar System and then out into interstellar space, then galaxies in all directions, utilizing starships that are Von Neumann probes with nanobot crews, breaking down whole planets, stars, moons, and meteoroids and reassembling them into computers. This, in effect, „wakes up“ the universe as all the inanimate „dumb“ matter (rocks, dust, gases, etc.) is converted into structured matter capable of supporting life (albeit synthetic life).

Kurzweil predicts that machines might have the ability to make planet-sized computers by 2099, which underscores how enormously technology will advance after the Singularity.
The process of „waking up“ the universe could be completed well before the end of the 22nd century, provided humans are not limited by the speed of light.

With the entire universe made into a giant, highly efficient supercomputer, AI and human hybrids (so integrated that, in truth it is a new category of „life“) would have both supreme intelligence and physical control over the universe. Humanity will still not possess infinite levels of any attributes, as the accelerating change of evolution never reaches an infinite measure (though it moves rapidly in that direction), becoming, as Kurzweil writes, „moving inexorably toward this monotheistic conception of God, though never reaching this ideal“; even with theories such as the holographic universe. The final chapter however notes that, if possible, the ability to create and colonize other universes (and if there is a way to do this, humanity‘s vast intelligence is likely to harness it, as with surpassing/bypassing the speed of light) could allow the intelligence of the human/machine civilization to extend indefinitely, akin to a mathematical singularity. If not, then saturating humanity‘s own universe will remain their ultimate fate.

Some indeterminate points within a few decades from now

permanent protection from the threat of asteroid impacts.
The antitechnology Luddite movement will grow increasingly vocal and possibly resort to violence as these people become

enraged over the emergence of new technologies that threaten traditional attitudes regarding the nature of human life (radical life extension, genetic engineering, cybernetics) and the supremacy of mankind (artificial intelligence). Though the Luddites might, at best, succeed in delaying the Singularity, the march of technology is irresistible and they will inevitably fail in keeping the world frozen at a fixed level of development.

The emergence of distributed energy grids and full-immersion virtual reality will, when combined with high bandwidth Internet, enable the ultimate in telecommuting. This, in turn, will make cities obsolete since workers will no longer need to be located near their workplaces. The decentralization of the population will make societies less vulnerable to terrorist and military attacks.

Other sources

Kurzweil said in a 2006 C-SPAN2 interview that „nanotechnology-based“ flying cars would be available in 20 years.

Kurzweil has said that by 2014, humanity will reach a „tipping point“ where the cost-per-watt from solar energy is cheaper than from coal and oil: By capturing only 0.03 percent of the sun‘s energy that falls on Earth, humanity could meet virtually all of its projected energy needs up to 2030[19] (thirty trillion watts); this will be capable through with extremely inexpensive, lightweight, and efficient nano-engineered solar panels together with nano-fuel cells to store and distribute the captured energy. Kurzweil believes, by the end of the 2020s, humans will be able to completely replace fossil fuels.

Kurzweil said the following in a November 2007 Computerworld interview:

Speech-to-speech translation features will be available in cell phones in either 2009 or 2010

By 2017, computers will have become even more ubiquitous in the environment, largely owing to smaller size. Some will be woven into clothing and will be „self-organizing.“

By the same year, practical virtual reality glasses will be in use. The devices will work by beaming images directly onto

the retinas of their users, creating large, three-dimensional floating images in the person‘s field of view. Such devices would provide a visual experience on par with a very large television, but would be highly portable, combining the best features of a portable video player and a widescreen TV. The glasses will deliver full-immersion virtual reality.

By 2017, „augmented reality“ will exist: The V.R. glasses previously mentioned will have advanced computers and sensors built into them that will be able to recognize elements within the user‘s environment and then provide appropriate information and assistance through visual or auditory means. If the user looks at a building or a person‘s face, the computer will provide information through a „heads-up-display“ beamed onto the person‘s retinas. The devices could also be used for keeping track of schedules, navigating, and querying for general information.

„By 2019, we will largely overcome the major diseases that kill 95 percent of us in the developed world, and we will be dramatically slowing and reversing the dozen or so processes that underlie aging.“

By 2022, medical technology will be more than a thousand times more advanced than it is today, and the „tipping point“ of human life expectancy will have been reached, with every new year of research guaranteeing at least one more year of life expectancy. Kurzweil also states that 3–4 months of life expectancy were added in 2007 due to the development of new medicines and treatments.

Cell phones and PCs will be increasingly woven into a global grid of computers wirelessly connected to the Internet. Instead of each device just sending and receiving its own data, more and more of the machines will be tasked with processing foreign data, creating a huge, interconnected network with millions of nodes.

By 2027, accurate computer simulations of all parts of the human brain will exist.[18]

18, wikipedia,,Predictions made by Ray Kurzweill,https://en.wikipedia.org/wiki/Predictions_made_by_Ray_Kurzweil

analysis:

Total analysis resume

Lexington avenue 610 belogs into the most economical active part of New York city. It is situated in Midtown East. There are locatet mainly office buildings. This is also reason why this part of the city has the lowet density of population per m^2. Midtown East is the final point for most of commuters on Manhattan. They are spendig almost three hours per day by commuting. Day time population is aroun 4 milions within the prediction but total population of Manhattan is only around 1.6 milions within the prediction. Total amount of population was decreasing from era in the first half of the 20th century. Now is slightly increasing and prediction corespond with whole North America population prediction. Most of the flats which are sold are one bedromm apartmens around 90 m^2. There is trend to build new apartments which are larger than the avarange value. It is caused becuse new apartments are build in ritch regions for ritch New Yorkers. Middle class often commute to work from other New Yorks brought. There are strict zooning rules for each lot.This rules were established in 1916 and modified in 1961.

Our global market is rapidly changing and also officing is rapidly changing also the technologi as a AI is raising up. Due to prediction most of the nowdays jobs will be replaced by the AI as a example could be McDonald fastfood. Good architect should deal with prediction and not only with nowdays situation. Prediction predict the most of work will be done from home. Huge office building will lost their purpose. Global source consumption is increasing and we have to think about saving this energi. Also Ikea did prediction how the future living will look. Everything will be smaller and multifunctional. Also Ray Kurzweill predict the future of humanity and changes in live.

The Midtown East need more apartments. City sholud be place to live and not only place for work.

Vision

Project vision

The vision is design ofice or apartmen building. This building will coresponfing with future predictions of humanity as a new kind of working habbits, new living habbits, new energy treatment and others predictions. This building should demonstrate living style in second half of the century. I took as a sample Japanes Meatabolism style which was established in the 60s. This style was desing for high densest city and Manhattan is one of these cities. I also want increase population in the city. I want to create model which turn the city to place where yu want to live and not place where you are working and than go home. Also the global decentralization play huge role in this idea. Finally, office building could be only apartment building with augmented enviromental which we know from todays computers games. Reason why I‘m thinking about it is simple. When we know that the averange working time in NY is around 48,8 hours it is mean that the worker spend 9 hour at work but the day has 24 hours. Office building is used only for one third of the day and it is mean that the office building is more than the half time of its life time empty. When I add averange commuting time to averange working time I got the total amount of time which the employee spent outside of home and it is around 65 hours per week. And again it is one third of the whole time of the week. The point of this thinking is why we are building officies and apartments when they are occupiing it only for part of the time. Why we are spending so much energi and money in the era of saving everything for this? What about to use one unit instead of two or three? Same question is about living. Why do I need kitchen when I‘m sleeping in the bed. Why I need something when I‘m not using it. Just imagine that you can have everything in one room. You will need not 170m^2 but only minimal optimal area. You will save money, enviromental and space. My vision is totally erase commuting, erase office building and implement all these things into apartments.

Apartments should suite for one person or two persons. Furniture and equipment should be multifinctionall.

Module building
minimal or optimal space
modifiable and inteligent interior equipment
home as a office
one or two persons unit
suitable for next half of century

How to bring work at home?

This idea of home officing comes from 90s when the internet were in the begening. After one decade of this trend scientist discovery one huge disadvantage. This disadvantage is social-separation. Most of the peoples suffer for psychically diseases. It is also reason why this cult disapear in the begening of new century. Some people are working from home today but it is not permament isolated work. After developing internet video calls this trends rise up again. These video calls are today widely used for meeting over the world. We can also apply for job by video call. This call save time for travelling and is cheap for both sides. But it is not as real meeting and solution for this disease. Todays huge topic is that the childrens are sitting behind the desk and playing the games. They are not meeting in physical world as it was common for us. They are meeting inside the virtual worlds. They are sharing their experience online. They are enjoying the real life in virtual life. We are also living in virtual reality. Almost everyone has facebook, email, twitter and etc. We are living in physical world but we are also living there. Everyone has different behavior on social network or some virtual network against the real physical word. When you met woman in online chatroom you are not shying a lot but in physical world there should be some borders. I just want to illustrate that we are already living in few worlds. These worlds are simulation of our physical world or they are extending physical world. They are saving time but they are also dangerous.

Most of the jobs today is done online. Like IT support, online training, online meeting, electronical communication between citizens and goverment. But there are still two groups on the both sides. All of these people are sitting in open space office with colleagues. But the next step is close. Or do we did the step. Yes we did it. We can already simulate any enviromental. We can be in living room but also be on rollercoaster. This technology is called virtual reality. Nowdays we can simulate any enviromental through the glasses. Lets have a look how VR start.

In 1938, Antonin Artaud described the illusory nature of characters and objects in the theatre as „la réalité virtuelle“ in a collection of essays, Le Théâtre et son double. The English

translation of this book, published in 1958 as The Theater and its Double, is the earliest published use of the term „virtual reality“. The term „artificial reality“, coined by Myron Krueger, has been in use since the 1970s. The term „virtual reality“ was used in The Judas Mandala, a 1982 science fiction novel by Damien Broderick. „Virtual“ has had the meaning „being something in essence or effect, though not actually or in fact“ since the mid-1400s, „...probably via sense of „capable of producing a certain effect“ (early 1400s)“.The term „virtual“ has been used in the computer sense of „not physically existing but made to appear by software“ since 1959.
...

The first references to the concept of virtual reality came from science fiction. Stanley G. Weinbaum‘s 1935 short story „Pygmalion‘s Spectacles“

...

1950–1970
Morton Heilig wrote in the 1950s of an „Experience Theatre“ that could encompass all the senses in an effective manner, thus drawing the viewer into the onscreen activity. He built a prototype of his vision dubbed the Sensorama in 1962, along with five short films to be displayed in it while engaging multiple senses (sight, sound, smell, and touch). Predating digital computing, the Sensorama was a mechanical device.

...

1970–1990

Battlezone, an arcade video game from 1980, used 3D vector graphics to immerse the player in a VR world.(Atari).
Also notable among the earlier hypermedia and virtual reality systems was the Aspen Movie Map, which was created at MIT in 1978. The program was a crude virtual simulation of Aspen, Colorado in which users could wander the streets in one of three modes: summer, winter, and polygons

1990–2000
Ambox question.svg
This section possibly contains previously unpublished synthesis of published material that conveys ideas not attributable to the original sources. Relevant discussion may be found on

the talk page. (February 2015) (Learn how and when to remove this template message)

A VPL Research DataSuit, a full-body outfit with sensors for measuring the movement of arms, legs, and trunk. Developed circa 1989. Displayed at the Nissho Iwai showroom in Tokyo
In 1991, Sega announced the Sega VR headset for arcade games and the Mega Drive console. It used LCD screens in the visor, stereo headphones, and inertial sensors that allowed the system to track and react to the movements of the user‘s head.In the same year, Virtuality launched and went on to become the first mass-produced, networked, multiplayer VR entertainment system. It was released in many countries, including a dedicated VR arcade at Embarcadero Center in San Francisco.
...
In 2013, Valve discovered and freely shared the breakthrough of low-persistence displays which make lag-free and smear-free display of VR content possible. This was adopted by Oculus and was used in all their future headsets.

...
Education and training

U.S. Navy personnel using a VR parachute training simulator.
Research has been done on learning in virtual reality, as its immersive qualities may enhance learning. VR is used by trainers to provide learners with a virtual environment where they can develop their skills without the real-world consequences of failing. Thomas A. Furness III was one of the first to develop the use of VR for military training when, in 1982, he presented the Air Force with his first working model of a virtual flight simulator he called the Visually Coupled Airborne Systems Simulator (VCASS)

...

VR is also used in flight simulation for the Air Force where people are trained to be pilots. The simulator would sit on top of a hydraulic lift system that reacts to the user inputs and events.
..
Medical personnel are able to train through VR to deal with a wider variety of injuries. An experiment was performed by sixteen surgical residents where eight of them went through laparoscopic cholecystectomy through VR training. They then

came out 29% faster at gallbladder dissection than the controlled group.
...
The use of 3D computer-aided design (CAD) data was limited by 2D monitors and paper printouts until the mid-to-late 1990s, when video projectors, 3D tracking, and computer technology enabled a renaissance in the use 3D CAD data in virtual reality environments. With the use of active shutter glasses and multi-surface projection units immersive engineering was made possible by companies like VRcom and IC.IDO. Virtual reality has been used in automotive, aerospace, and ground transportation original equipment manufacturers (OEMs) in their product engineering and manufacturing engineering . Virtual reality adds more dimensions to virtual prototyping, product building, assembly, service, performance use-cases. This enables engineers from different disciplines to view their design as its final product. Engineers can view the virtual bridge, building or other structure from any angle. As well, some computer models allow engineers to test their structure‘s resistance to winds, weight, and other elements. Immersive VR engineering systems enable engineers, management and investors to see virtual prototypes prior to the availability of any physical prototypes.[19]

fig 20 VR glasses. From left: google card board, Oculus rift DK1, sensorama 1950

19, wikipedia,Virtual reality,https://en.wikipedia.org/wiki/Virtual_reality

fig 21, drawing in VR

this technology allow us to move our mind to another place. When you link this headset with other devices for tracking position and other you can free move in VR. You are only limited by sizes of room. For experimantation I bought Oculus Rift DK 2 set and try to do some research. I were testing few different subjects. First subject was 9 year boy. He had no previous experience. He visited simulation of rolercoaster and office. After short testing he provide me information, that it was awesome. He were not thinking about how it is working. He just accept it as a part ordinarry life. Second person was adult boy. He saw the same scenes and he was mainly intersting into the function how it is done. Third subject was older woman. Se saw the same scenes. Her reaction was quite skeptic. She was tryind arguments why not to use it. But all subjects were really moved to other place. Their body was moving as the simulation was changing. Their brain was thinking that they are elsewhere. I was testing this unit with hand movement scanner LEAP motion. I simulate office enviromental. It was functionall but the resolution of display was low. It is mean that the pixels are visible and experience is not real. But the hand scaner work perfectly. I were able to use my hands in VR enviromental. But you still need wear huge glasses and it is not comfortable.

Second system using augmented reality. This system extending our reality about augmented things. Also Apple investing lot of money to developing glasses for AR. Nowday there are mainly Hololense from Microsoft and Moverio glasses from Epson. Both system using small build in display in glasses. This tech-

nology is great for augmenting anything. You can have empty room and augmented thing which are not physically there. This concept use ikea with their furniture catalog. They were using cell phones for augmenting. You selected the item and than point your phone directly to place where you want to project furniture and it was projected on you screen.

fig 22 augmented table

Epson Moverio glasses are starting using in aircraft industry. The newest Microsoft Holones are used for many purpose. For exhampple for simulating games, technical sheets and etc.

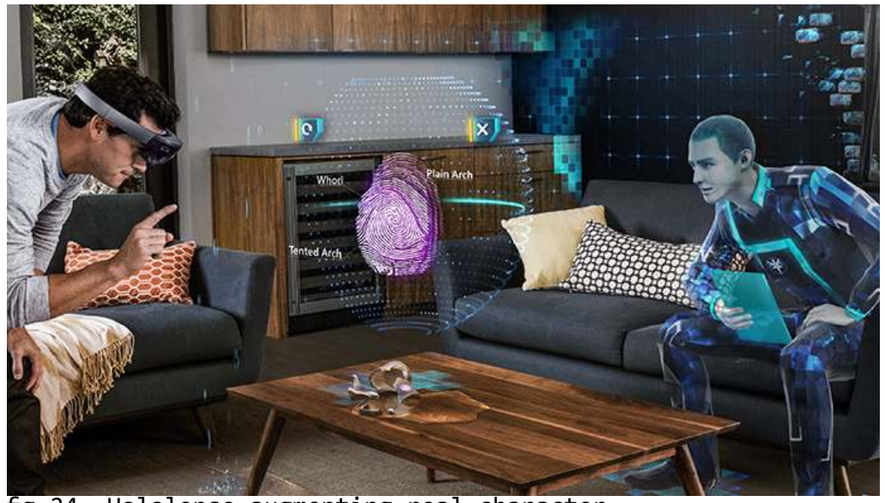


fig 24, Hololense augmenting real character

This technology allow us ugment almost anything and everywhere. This sould be todays solution of remote work without loosing connection with others people. But the technology going much more farer. Samsung anounce in the end of the last year, that thay will product contact lense with build in sreen.

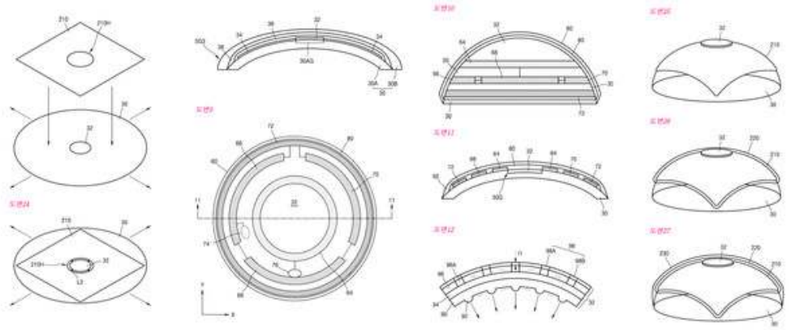


fig 25 samsung patent of contact lens

Everything going smaller and smaller. But when we think about main point of this system we will discovery that all these things are tricking our brain. Because all these things are just signals which are transmited into brain and there they are encrpted and than our brain know what we see, feel and smell. Each this signal is transmited and read by neurons. What about direct simulation of neuron? Is this possible? We know that the oposite way is working. We can read and encrypt signals from brain. We need for it device called Brain Computer Interface. And it is working. This whole branch is in research. We alredy know how the 20% of human cortex work but the prediction that

we will understand whole brain in few next decades. BCI devices could be divided into two brand invasive and non invasive. We need put the sensors into the cortex. Because non invasive method can read only signals from the surface of brain. Fortunately in these region is located coordination center. We can alredy read mental comands for movements. And we can do it home. We just need EPOC device.


fig 26 ,Epoc device

I bought this device and did short researche.This machine is not fully functional already. It is able to read mental comand but the accuracy is not perfect. Some institutes did research with this unit and they wrote pgromgram which is able to control electric chair. I had consultation with doc. Ing. Lenka Lhotská, CSc. she is leader of research of UI and neuroscience at CTU. She provide me information, that we can already red coordination signal directly from brain with non invasive method but not with the EPOC headset but with regular EEG. She confirmed me that we can control PC via mental comands based on coordination center. For exhample when you want to write word CAT at keybort you have to imagine cat, than imagine each world, than imagine how to type and than give signal to fingers to start moving on keyboard. We are not able read that the user thinking about cat but we can read how he want to type it. And than we can move this through program and here we have

vision

interface how to type without moving fingers. But this is something what can be done today. Prediction sayig that we will implemented *neurobots*. Each neuron in our brain will be joined by nanobots and this nanobot take control instead of the neuron. This is realy long way to finish this ambition. But it is possibble. Than we can simulate anything directly inside our brains. And this is technology which I choose for my purpose. It cone be done today with glasses but this project is about future.

Officing from home resume

New generation of workers will work remotely from his homes. They will be using for it augmented and virtual reality. Today we can use glasses. Next generation will be eye lenses with displays and the last one will be direct simulation inside the brain. You will be sitting at home and your virtual office will be projected directly onto your retina. You will be able moving with things in VR just by pover of your mind. You can just sit and take relax.

neurobots - Neurobiotics is an loose term without strict definition referring to the study of the nervous system in conjunction with technology. Of particular importance in the field of neurobiotics is the brain and its direct interaction with computer systems, as well as methods of externally simulating the brain. Also, a large branch of neurobiotics commonly called neurosimulation, concerns the attempt to produce strong AI by combining neural networks and the basics of psychology.[22]

fig 22 ,wikipedia.org, 10.2016, Neurobiotics , https://en.wikipedia.org/wiki/Neurobiotics

Analysis on timeline

\\Analysis

1000-700b.c.

Hephaestus
father of robotics. He created first robotics servant.

Iran
description of thing that works as a now known Zoetrope

5000b.c.

16th century

Judah Loew ben Bezalel
The Golem

Manhattan history
In 1609, Henry Hudson led the first Dutch expedition to New York.

1609

Leonardo Da Vinci
The robot knight

1495

1634

John Bate
The Mystery of Nature and Art - describe **Zoetrope.**

1725

Jacquese Oznam
Recreations Mathematiques et Physiques - knight‘s tour

Telegraph
long-distance telegraphy (transmission of complex messages) started in 1792

1792

1820-40

Industrial revolution

Fuel cell
A fuel cell is a device that converts the chemical energy from a fuel into electricity through a chemical reaction of positively charged hydrogen ions with oxygen or another oxidizing agent

1838

0 1600 1700 1800

1833

Phenakistoscope
French company Alphonse Giroux et Compagnie in their application for an impotrt license (29 May 1833)

1852

Elevator
Elisha Otis introduced the safety elevator

1853

François Coignet
first iron reinforced concrete structure

1884

First skycraper
The Home Insurance Building in Chicago. But the expression first is not clearly because there is a lot of candidates.

1890

Giuseppe Peano
In geometry, the Peano curve is the first example of a space-filling curve

1895

Space elevator
The concept of a space elevator was first published in 1895 by Konstantin Tsiolkovsky

UAV - drones
In 1849 Austria sent unmanned, bomb--filled balloons to attack Venice.

1849

Phone
In 1876, Scottish emigrant Alexander Graham Bell.DynaTAC 8000x was the first commercially available handheld mobile phone.

1876

E_8
The Lie group E_8 has dimension 248. Its rank, which is the dimension of its maximal torus, is 8.

1887

The Crystal palace
The Crystal Palace was a cast-iron and plate-glass structure originally built in Hyde Park, London, to house the Great Exhibition of 1851. Joseph Paxton

1905

Population
1.9 bilion

1900

1850

1900

1911

Superconductivity
is a phenomenon of exactly zero electrical resistance

1920

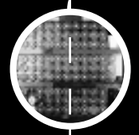
Manhattan skycraper boom
first boom was in 1920s

1933

Meissner effect
is the expulsion of a magnetic field from a superconductor during its transition to the superconducting state

1941

Isaac Asimov
prediction - automated world, robotics industry



1950

Alan Turing
Computing Machinery and Intelligence - agrtificial inteligence

1950s

Stanley G. Weinbaum
describes a goggle-based virtual reality system with holographic recording of fictional experiences, including smell and touch.

Zoning resolution
was a measure adopted primarily to stop massive buildings

1916

R.U.R.
is a 1920 science fiction play by the Czech writer Karel Čapek. R.U.R. stands for Rossumovi Univerzální Roboti (Rossum's Universal Robots)

1905

Antonin Artaud
described the illusory nature of characters and objects in the theatre as „la réalité virtuelle“ in a collection of essays, Le Théâtre et son double.

1938

1950

Nanorobotics
Nanorobotics is an emerging technology field creating machines or robots...

1959

1950s

Stanley G. Weinbaum
describes a goggle-based virtual reality system with holographic recording of fictional experiences, including smell and touch.

1952

Solomon R. Guggenheim Museum
Designed by Frank Lloyd Wright, the cylindrical building, wider at the top than the bottom, was conceived as a „temple of the spirit“. Its unique ramp gallery extends up from ground level in a long, continuous spiral along the outer edges of the building to end just under the ceiling skylight. The building underwent extensive expansion and renovations in 1992 (when an adjoining tower was built) and from 2005 to 2008.

Nanorobotics
Nanorobotics is an emerging technology field creating machines or robots...
1959

Theodore H. Maiman
first laser
1960

1960s

e-mail
first email communication

internet
The origins of the Internet date back to research commissioned by the United States federal government in the 1960s to build robust, fault-tolerant communication via computer networks
1960s

1961

Zoning FAR index
The new zoning solution

1960s

Mobile phone
The first handheld mobile phone was demonstrated by John F. Mitchell and Martin Cooper of Motorola in 1973, using a handset weighing c. 4.4 lbs (2 kg).

Unimate
Unimate was the first industrial robot, which worked on a General Motors assembly line at the Inland Fisher Guide Plant in Ewing Township, New Jersey, in 1961.
1961

1967

Kinoautomat
the world‘s first interactive movie,conceived by Radúz Činčera for the Czechoslovak Pavilion at Expo ‚67 in Montreal.

1970

Imax movie
Tiger Child, the first IMAX film, was demonstrated at Expo ‚70 in Osaka, Japan

Head mounted display
Ivan Sutherland, with the help of his student Bob Sproull, created what is widely considered to be the first virtual reality and augmented reality (AR)

1968

BCI - brain-computer interface
Research on BCIs began in the 1970s at the University of California, Los Angeles

1970

1970

1970s

Myron Krueger
has been in use since the 1970s. The term „virtual reality“ was used in The Judas Mandala

1970

Cloud computing
Full time-sharing solutions were available by the early 1970s on such platforms as Multics (on GE hardware), Cambridge CTSS, and the earliest UNIX ports (on DEC hardware).

1973

IBM exceeded legal limitation FAR
IBM building to replace the existing one was permitted by New York City

Dennis Gabor
was awarded the Nobel Prize in Physics in 1971 „for his invention and development of the holographic method

1971

Wabot
first fun-scale anthropomorphic robot developed in the world. It consisted of a limb-control system, a vision system and a conversation system.

1973

1978

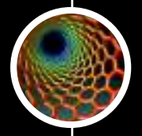
Aspen Movie Map
The program was a crude virtual simulation of Aspen, Colorado in which users could wander the streets in one of three modes: summer, winter, and polygons.

1982

VR for military training
Coupled Airborne Systems Simulator (VCASS).

1985

Fulerene
A fullerene is a molecule of carbon in the form of a hollow sphere, ellipsoid, tube, and many other shapes.



VPL Research
VPL Research has developed several VR devices like the Data Glove, the Eye Phone, and the Audio Sphere.

1985

VR Architecture
One of the first recorded uses of virtual reality in architecture was in the late 1980s when the University of North Carolina modeled its Sitterman Hall...

1980

1990

Humanoid robotics
humanoid robots in fictional stories, some real humanoid robots have been developed since the 1990s, and some real human-looking android robots have been developed since 2002

1991

Programmable matter
term originally coined in 1991 by Toffoli and Margolus to refer to an ensemble of fine-grained computing elements arranged in space

1993

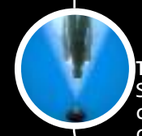
ROTEX
The First Robot in Space

Sega VR headset
It used LCD screens in the visor, stereo headphones, and inertial sensors that allowed the system to track and react to the movements of the user‘s head

1991

LEGO - Mindstorm
The first-computer controlled LEGO products are released.

1986



Teleportation
Since 1993, teleportation has become a hot topic in quantum mechanics, namely state, energy and particle teleportation.

1993

1990

1993

Foglet
is a hypothetical collection of tiny robots that can replicate a physical structure.

1994

Chatterbot
Michael Mauldin (creator of the first Verbot, Julia)

1996

ICQ
ICQ is an open source instant messaging computer program that was first developed and popularized by the Israeli company Mirabilis in 1996

Furby
A Furby is an American electronic robotic toy released in 1998 by Tiger Electronics.

1998

Programmable matter
Paper describes a computing substrate that is composed of fine-grained compute nodes distributed throughout space which communicate using only nearest neighbor interactions. In this context, programmable matter refers to compute models similar to cellular automata and lattice gas automata (Rothman & Zaleski 1997).

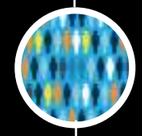
1994

1999

Ray Kurzweill
The Law of Accelerating Returns. In his 1999 book The Age of Spiritual Machines Kurzweil proposed „The Law of Accelerating Returns“

1999

VR optic lenses
Contact lenses that display AR imaging are in development. These bionic contact lenses might contain the elements for display embedded into the lens including integrated circuitry, LEDs and an antenna for wireless communication. The first contact lens display was reported in 1999[36] and subsequently, 11 years later in 2010/2011



2000

Population
7 bilion

A.L.I.C.E.
(Artificial Linguistic Internet Computer Entity), also referred to as Alicebot, or simply Alice, is a natural language processing chatterbot—a program that engages in a conversation..

2000

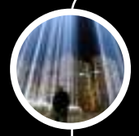
Working from home +68%
New Yorkers working from home increased by 68 percent from 2000 to 2014

2000

2000

2002
SpaceX
Space Exploration Technologies Corporation, better known as SpaceX, is an American aerospace manufacturer and space transport services. company headquartered in Hawthorne, California, United States. It was founded in 2002 by Tesla Motors CEO and former PayPal entrepreneur Elon Musk.

2002
Tribute in Light
The Tribute in Light initially ran as a temporary installation from March 11 to April 14, 2002.



2003
Nick Bostrom
ARE YOU LIVING IN A COMPUTER SIMULATION?

Skype
Roomba was introduced in September 2002 autonomous robotic cleaner.
2003

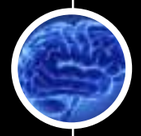
WTC Design Competition
2002 New York, NY
Shigeru Ban architects
2002

Roomba
Roomba was introduced in September 2002 autonomous robotic cleaner.
2002

2002

2004
facebook
social media

2005
Blue brain project
digital reconstruction of the brain by reverse-engineering



2010
Siri
Siri‘s primary technical areas focus on a Conversational Interface, Personal Context Awareness, and Service Delegation.

Bitcoin
is a cryptocurrency and a payment system invented by an unidentified programmer, or group of programmers, under the name of Satoshi Nakamoto.
2008

Biochip
The joint use of nanoelectronics, photolithography, and new biomaterials provides a possible approach to manufacturing nanorobots for common medical uses, such as surgical instrumentation, diagnosis, and drug delivery.
2008

Claytronics
Claytronics is an abstract future concept that combines nanoscale robotics and computer science to create individual nanometer-scale computers called claytronic atoms, or catoms...
2005

2011-?
Industrial revolution 4.0
is the current trend of automation and data exchange in manufacturing technologies.

2012
Google self-driving cars
autonomous cars, developed by Google X

Second life
Virtual world, virtual life
2012

Watson
question answering computer system capable of answering questions posed in natural language, developed in IBM
2011

2012
Ikea augmented catalog
Catalog in AR

Flyboard
The Flyboard was invented in Autumn 2012 by a French water-craft rider, Franky Zapata
2012

2013
Delivery drone
December 2013 announcement that Amazon was planning rapid delivery of lightweight commercial products using UAVs.

AR fitting mirror
AR mirror in fitting room
2013

2013
Virtuix Omni
is a locomotion simulator for virtual reality games and other applications currently in development by Virtuix.

Multi elevator
Thissen multi space elevator
2013

2013
Google glass (X)
Google Glass is an optical head-mounted display designed in the shape of a pair of eyeglasses

Nintendo patent 3D on 2D TV
A camera on the TV tracks the viewer‘s location relative to the TV, and if the viewer moves, everything on the screen reorients itself appropriately.
2013

2013

Fuel cell 50 GW
The fuel cell market is growing, and in 2013 Pike Research estimated that the stationary fuel cell market will reach 50 GW by 2020.

2014

Magic Leap
Magic Leap is a US startup company that is working on a head-mounted virtual retinal display which superimposes 3D computer-generated imagery over real world objects, by projecting a digital light field into the user‘s eye.[1][2] It is attempting to construct a light--field chip using silicon photonics.[3]

2015

Robotics hotel - Sasebo
hotel without employe, only robots

Digi hospital Humber River
first completly digital hospital

2015

Cochlear implant
is a surgically implanted electronic device that provides a sense of sound to a person who is profoundly deaf or severely hard of hearing in both ears.

2014

IoT
n 2013 the Global Standards Initiative on Internet of Things (IoT-GSI) defined the IoT as „the infrastructure of the information society.

2013

2015

2015

UAV - drones
Civilian drones now vastly outnumber military drones, with estimates of over a million sold by 2015.

2016

Pepe pizza robots
autonomous pizza robots

2016

Manhattan of today
s the most densely populated borough of New York City, its economic and administrative center, and the city‘s historical birthplace

Apple working on AR

2016

HoloLense
mixed reality smartglasses developed by Microsoft.

2016

Gallery explorer
galery virtual explorer

2015

Teleportation
Y. Wei proposed that particles themselves could teleport from one place to another

2016

2016

2016

GE - 3D printing
GE’s next generation LEAP engine, the fuel nozzle ended up saving about $3 million per aircraft, per year for any airline flying a plane equipped with one.

2016

Samsung contact lens displays will put AR video and cameras in your

Tango by Google
...3D mapping, physical space measurement, environmental recognition, augmented reality, and windows into a virtual world.

2016

Manhattan of today
he most densely populated areas in the world. 1,644,518 living in a land area of 22.83 square miles (59.13 km2).On business days, over 3.9 million

2016

Hyperloop
ubai has agreed a deal with US startup Hyperloop One to evaluate the construction of a near-supersonic transport link that could slash travel times to Emirati capital Abu Dhabi to minutes.

2016

2019

augmented reality“ and „virtual reality“ in three different ways...

2019

The summed computational powers of all computers is comparable to the total brainpower of the human race.

2019

Computers are embedded everywhere in the environment (inside of furniture, jewelry, walls, clothing, etc.).

People communicate with their computers via two-way speech and gestures instead of with keyboards.

2019

Ray Kurzweill - prediction
The computational capacity of a $4,000 computing device (in 1999 dollars) is approximately equal to the computational capability of the human brain

2019

2020s

Ray Kurzweill - prediction
Phone calls entail three-dimensional holographic images of both people.
By 2020, there will be a new World government computer science department...

2026

Mars One
Mars One is an organization based in the Netherlands that has proposed to land the first humans on Mars and establish a permanent human colony there by 2026.The private spaceflight project is led by Dutch entrepreneur Bas Lansdorp, who announced the Mars One project in May 2012. The project‘s schedule, technical and financial feasibility, and ethics, have been criticized by scientists, engineers and those in the aerospace industry.

2029

Ray Kurzweill - prediction
The vast majority of computation is done by computers and not by human brains.

AI takes 6% jobs in US

2021

Kitchen koncept IKEA
IKEA collaborated with IDEO and design students School of Industrial Design at the Ingvar Kamprad Design Centre at Lund University, and the Industrial Design department at Eindhoven University of Technology.

2025

2020

2025

2030s

Ray Kurzweill - prediction
A computer passes the Turing Test, becoming the first true artificial intelligence. #To be confirmed, low probability of confirmation before 2030s

2050

Water stress MIT
researchers find that by 2050 more than half the world’s population will live in water-stressed areas and about a billion or more will not have sufficient water resources.

2099

Ray Kurzweill - prediction
The human brain has been completely reverse engineered and all aspects of its functioning are understood.
Natural human thinking possesses no advantages over computer minds.
Machines have attained equal legal status with humans.
Humans and machines merge in the physical and mental realms. Cybernetic brain implants enable humans to fuse their minds with AI‘s.
In consequence, clear distinctions between humans and machines no longer exist.

Population
10 bilion

2100

Ray Kurzweill - prediction
Food is commonly „assembled“ by nanomachines. This food is externally indistinguishable from „natural“ food, but it can be made more wholesome since production...

2049

AI takes 45% jobs in whole world

2045

2050

How does the apartment will look?

As I wrote units should be minimal. Also idea of multifunctional equipment is important. My idea is create one room where all furnitures and equipment is assembled when you decide to use it. You really need not bed or whole bedroom when you are sittin on sofa in living room. New Yorkers usually has one room but still they there have stuff which are not using. I want to reduce it to minimum. Ideal model is empty room. When we use AR we can simulate things but just per view. I can physical sitting inside the empty room and all furniture is visualising. This idea comes from video mapping. With this technology we can map anything at tu surface with projectors. Nowdays AR working at the same principle but instead of projectors using glasses. It mean that inside the room can be two different spectators and each one can see something else. I did few studies based on Kurokava capsula building. There was main core and on the outer surface hangs minimal units.

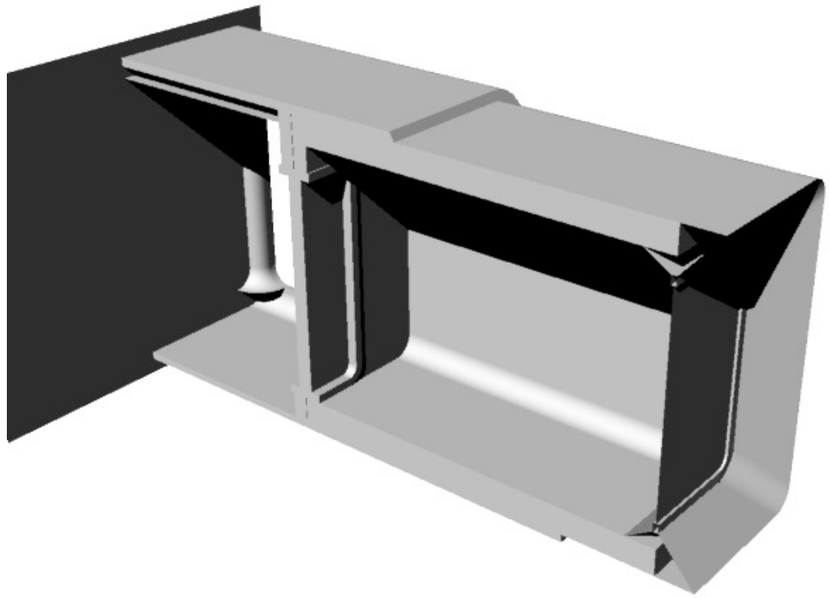


fig 28 ,section of capsula unit, first design

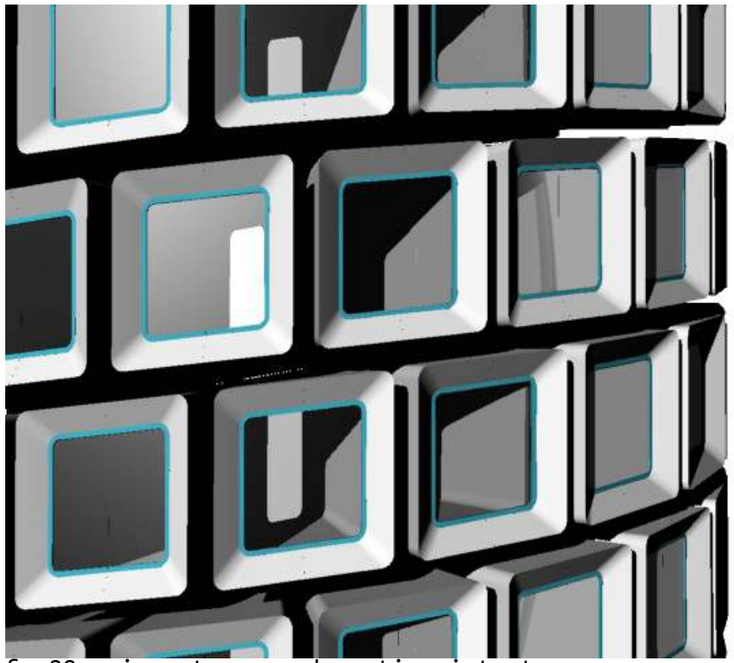


fig 29 ,view at grouped section into tower

fig 30, another type of units grouped into tower

vision

The last studies of mass were using physical structure and physical equipment which was reduce to minimum and also reduce total area of unit to minimum. Each unit was self sustainable. Each unit has own hydrogen source of energy this source provide enaught energy for many months and it was in sizes as shoes box. Each user was responsible for his unit. In the begening there were designed public showers but lately it was modified and chosen differnt system with lower water consumption. Principe is based on hygienical tissues or gel. You need no water. You just clean body with dry shower. This texhnology is used on ISS. ISS using also recycling water. The system is collecting all water from enviromental such as moisture, sweat and urine. This waste water is recycled to drink water and this cicrle going again and again. Feces treatment is almost the same. All the feces are packed into bags and stored. Nowday sewerage system is uneconomical and we are wasting with lot of water useless. This self sustainable system is ecological and need not any outer support systems.Feces are used as manure inside the greenhous which one is part of unit. There is still one source which has to be delievered and it is food. Users have to eat and preparing melas. One prediction predict future to 3D printers. Principe is the same as classic 3D printer. You will fill printer with cartrige with the different flavors and printer will printing combination of flavors. You need not more cooking. One thing you need is 3D printer and enaught flavors supply. Flavors can be stored inside the tubes and refilled.

Next step assuming existing progress

This unit is minimal and functional. But this project is about future and strucutre system look wierd. That is reason for resume all data and finding different form. First question is why are we building straight vertical structures? This is not about structure because we can design incredible structures which are not straight. I were looking for question and answer come. Because this system is most economical. We create vertical bearing strucuture inside or next by this strucuture we place elevator and some corridor and we have a tower. This I found as a reason why we are building straight structure. Each architect thinking about strucutre and communication inside the building. Everyone know that the elevator going upside and down. There is no other way how to get residents to their flats. ThyssenKrupp anounce new generation lifr. This lift can

move horizontal same as vertical. This lift provide new way about spatial modelling of building.

fig 31, spatial elevator

This is the revolution as in 1835 when was the Teagle lift developed. This provide for us new range for our designs. We are not fixed to vertical lines and our desig can be wilder. This brings me idea to desig more free space which is not linked with vertical line.

Shaping of the building

idea of magnetic lift brings me idea to deeply discover magnetic levitation. One of my colleague Dominik Císař did project based on electromagneticalfield which was able fixed anything in space thanks to electromagnetic field. Scientists were able to fix frog in space thanks to magnetic field. This was developed by A.Geim and he obtain Nobel prize for it in 2000.[20]
I did research how does it work. I found the superconductivity matter topic. Superconductivity is a phenomenon of exactly zero electrical resistance and expulsion of magnetic flux fields occurring in certain materials when cooled below a characteristic critical temperature... superconductivity is a quantum mechanical phenomenon. It is characterized by the Meissner effect, the complete ejection of magnetic field lines from the interior of the superconductor as it transitions into the superconducting state. The occurrence of the Meissner effect indicates that superconductivity cannot be understood simply as the idealization of perfect conductivity in classical physics.[21]

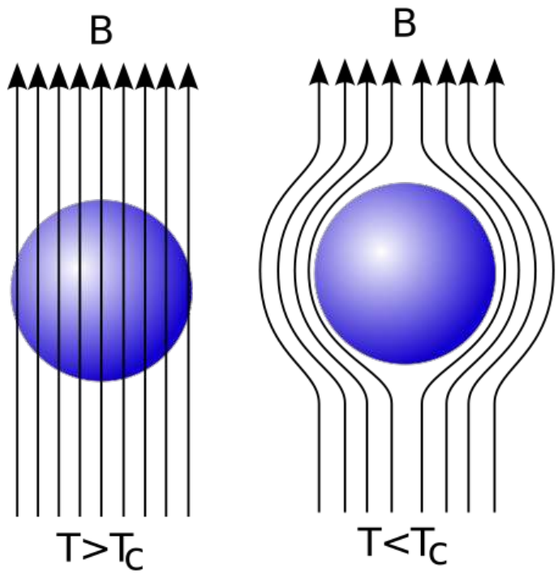


fig 32, Messner effect

20, Sarah Lewis, The Deliberate Amateur, http://www.slate.com/articles/business/how_failure_breeds_success/2014/05/nobel_prize_in_physics_andre_geim_went_from_levitating_frogs_to_science.html

21, wikipedia.org, Superconductivity, https://en.wikipedia.org/wiki/Superconductivity

This idea bring me to create free floating units in space. Physocally it is possible. As a inspiration was for me also book The City and the Stars by Arthur C. Clarke. There is desribed sphere as a place where to main character live. This sphere is infinite space. When you are walking inside the sphere than the spehere is moving in direction in which you are moving. Surface of the ball is huge display where is the outter world projected. This is something like the zorbing ball.

fig 33, zorbing ball,

Each aparment could be one levitating sphere. Also i found inspiration in bubble blower. When you blow bubble out the bubble is floating in space. It is going up and down.

fig 34, bubbles, bubblesage/48e7156ed15ef51bcbefa-ce4cb78fdfd-1464898279.jpg

Shaping of the building

Because the unit will be levitating in space and also in high position in the air. It is necessarry to design it aerodynamic. Wind speed is increasing with atitude.

fig 35. MAXIMUM WIND SPEED NY

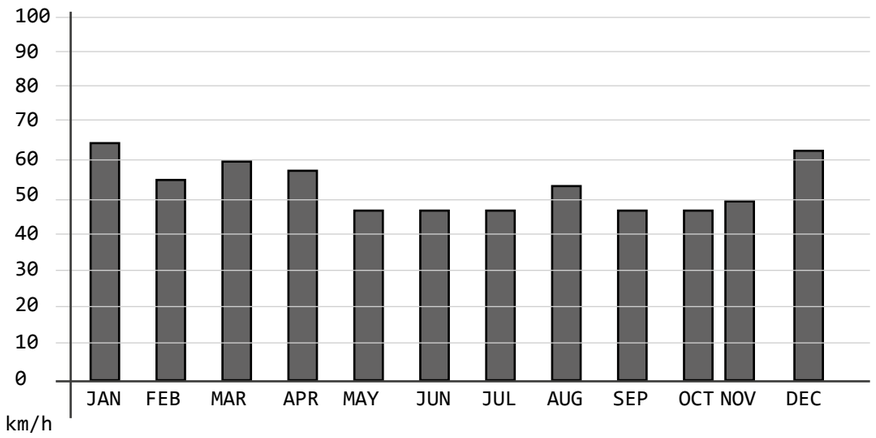
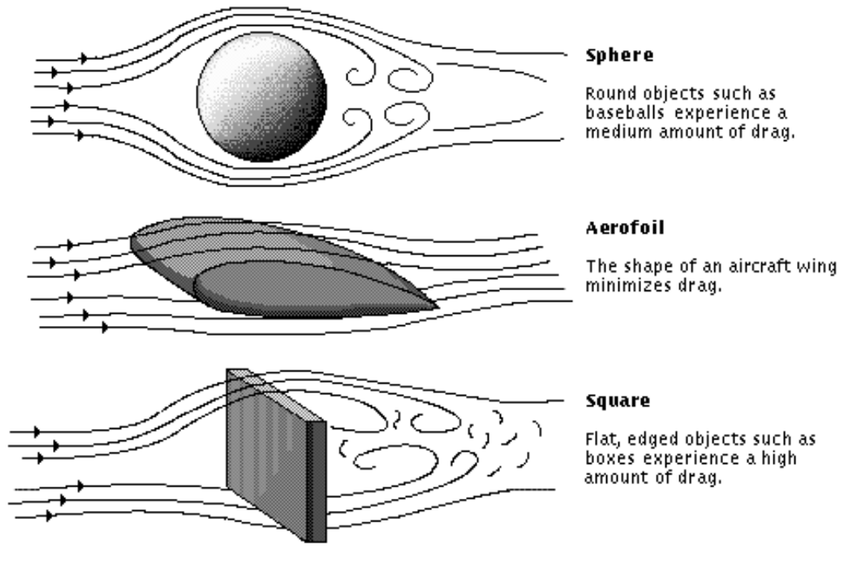
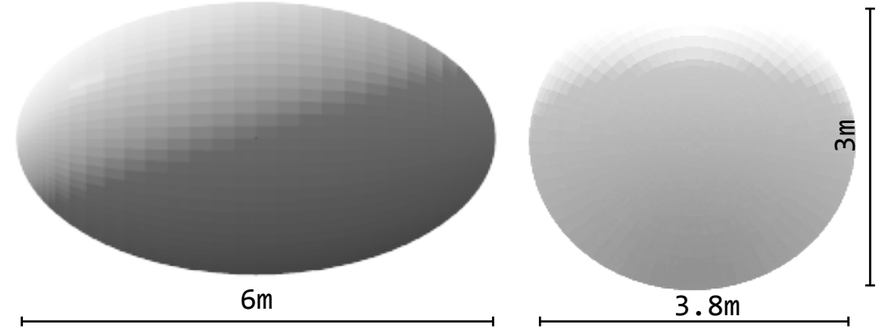


fig 36. Aerodinamics

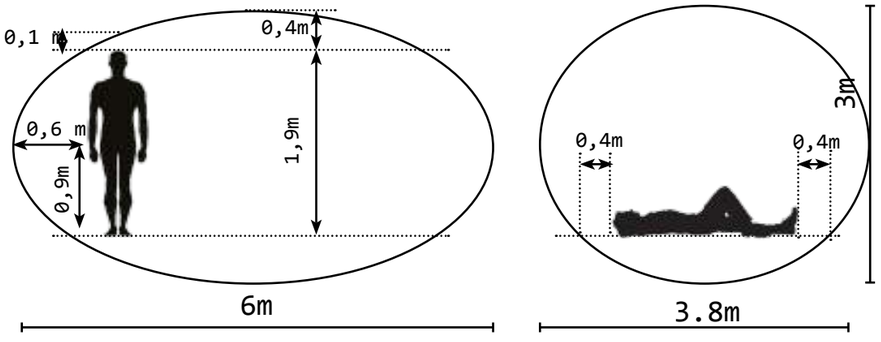


Instead of sphere I decide to use elipsoid because this shape is more aerodynamic then the sphere especially when he is turned tips toward the wind direction.

Elevation



Sections



Floor plan

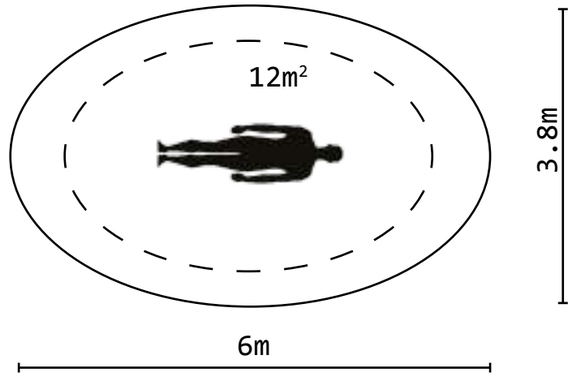


fig 37, spatial dimensions

These dimensions were choose by testing on model in scale. First model used same size in width and height. But these dimension were not sufficient. Width must be extend about 1 meter lenght. This extension is necessarily for using by two users. One user can lay down and another can comfortly walking aroud him. Also the curvation is based at moddeling enaught space in ending section. When the user step into tip he can reach with hand at units surface without hittin the surface with head. On the edges can be place tables or some seating furniture and inner will be open. Total floor area is 12m^2.

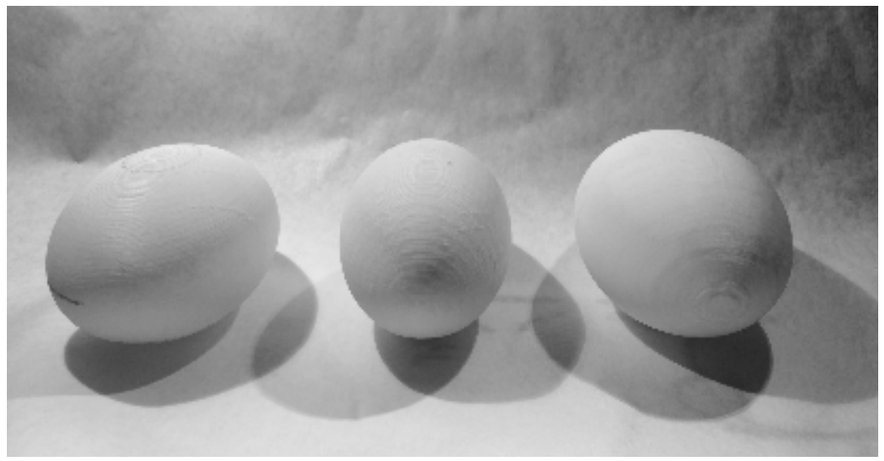


fig 38, shaping on model

Testing the inner space

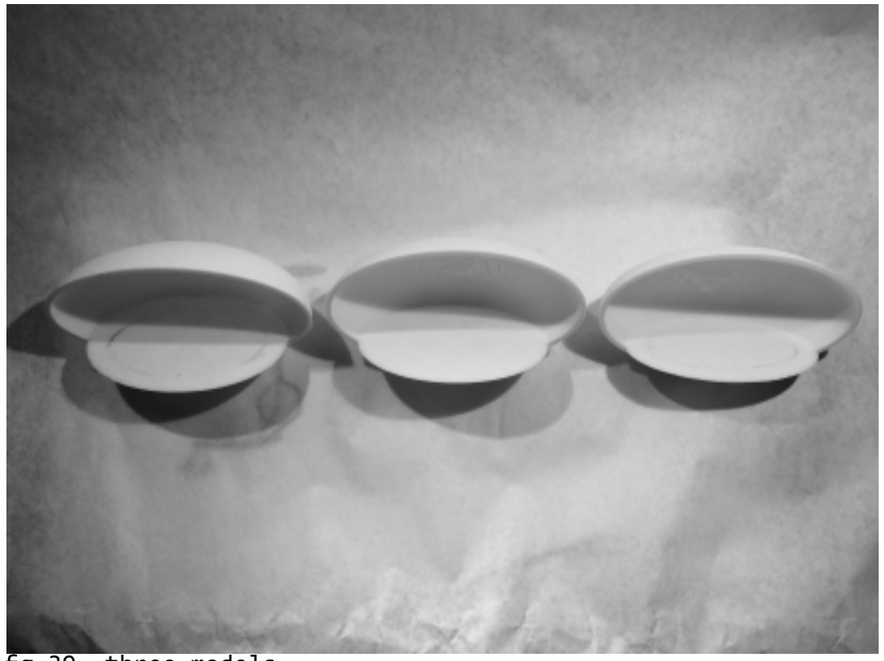


fig 39, three models

fig 40, spatial dimension, laying person

fig 41, standing person in corner

fig 42, standing person in space

fig 43, different materials

Final form was designed and next topis is solve how to get human inside this unit. Spatial elevator is not possible to use because the units are not physically connected. I‘m using for transport around the city electric unicycle. This unit is light and easy controlled.

This unit can be taken everywhere with me. Simillar idea were used also for designig personal flying board. First idea of flying board was developed in movie Back to the Future. One year ago the Lexus company developed flyind board in California. They were using quantum levitation and they have to build special skating park. In the 2012 the French water-craft rider Franky Zappa developed flying board based on water stream. In last year he developed flying board based on turbine engine. This unit can reach 150 km/h and flying autonomous.[21]

fig 44, electric unicycle

22, wikipedia.org, Flyboard Air, https://en.wikipedia.org/wiki/Flyboard_Air

fig 45 , Flying board Air

fig 46 , Flying board Air

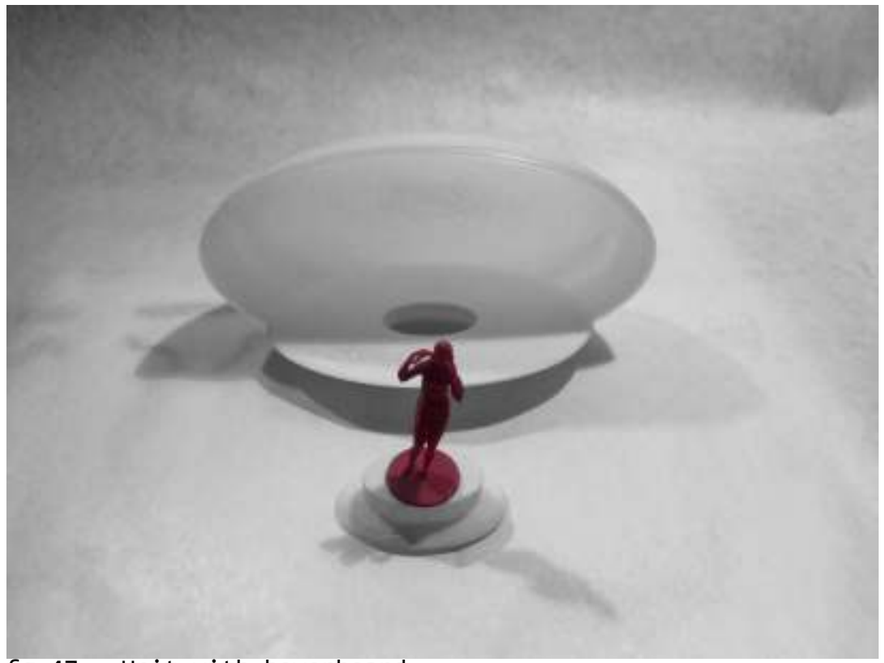


fig 47 , Unit with howerboard

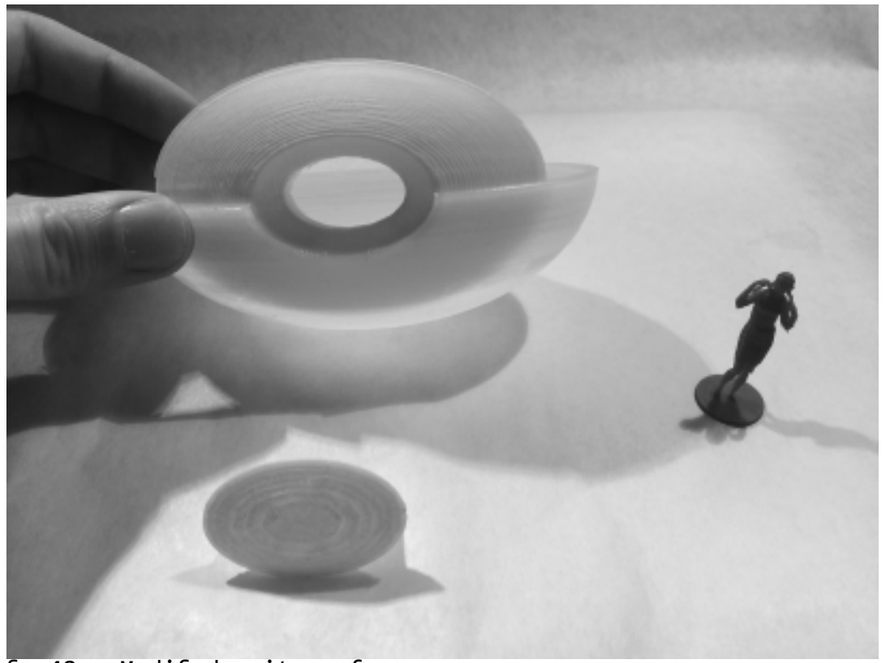


fig 48 , Modified unit surface

fig 47 , How does the transport work

fig 48 , How does the transport work

fig 49 , How does the transport work

fig 50 , How does the transport work

How to generate furniture inside the unit?

Human need equipment to live. He need to sit on something, he need to sleep in something, he need to work on somethig and so on. How to use idea of multifunction equipment in this case. First idea was to use 3D printing, but this process is slow and material is hard to recycle or rebuilding in other form. We are alredy deweloped material which is able to repair by himself. It is happening in atoms scale. Science use this method self assembling system in robotics. This system called M-blocks and was developed at MIT in 2013.[22]

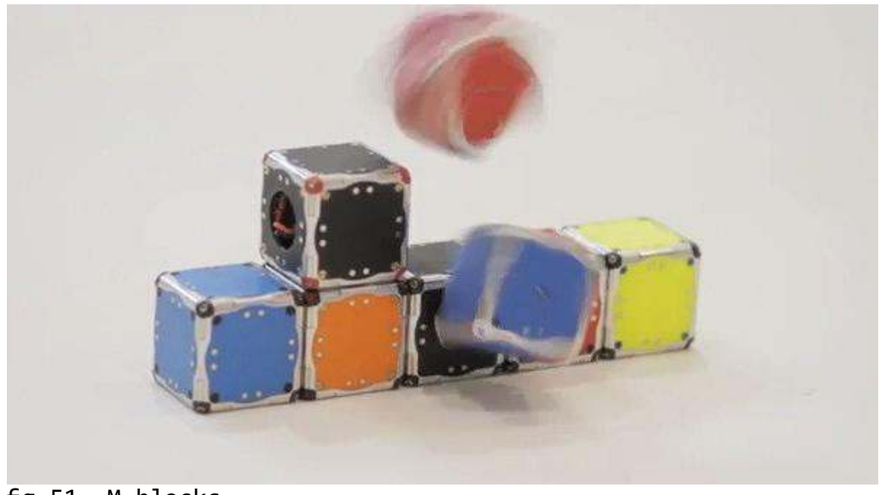


fig 51, M-blocks

How to generate furniture inside the unit?

These robots work in swarm and thery are able to cooperate and build anything what we can programme and design from cubes. But the scientist go much more onwards today. They are develo-pin structure called Clay tronics *(Claytronics is an abstract future concept that combines nanoscale robotics and computer science to create individual nanometer-scale computers called claytronic atoms, or catoms, which can interact with each other to form tangible 3D objects that a user can interact with. This idea is more broadly referred to as programmable matter.[1] Claytronics has the potential to greatly affect many areas of daily life, such as telecommunication, human-computer inter-faces, and entertainment.)*[23]

23, wikipedia.org, Claytronics, https://en.wikipedia.org/wiki/Claytronics

22, wAmina Khan, 04.2013,
Cute yet creepy? http://articles.latimes.com/2013/oct/04/science/la-sci-sn-mit-block-self-a-ssembling-robots-cubes-terminator-20131004

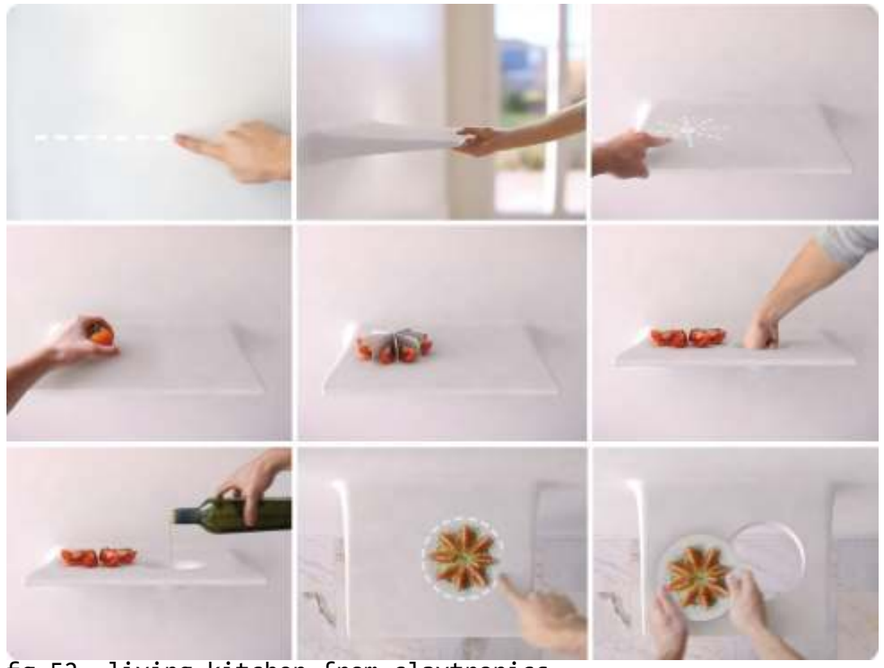


fig 52, living kitchen from claytronics

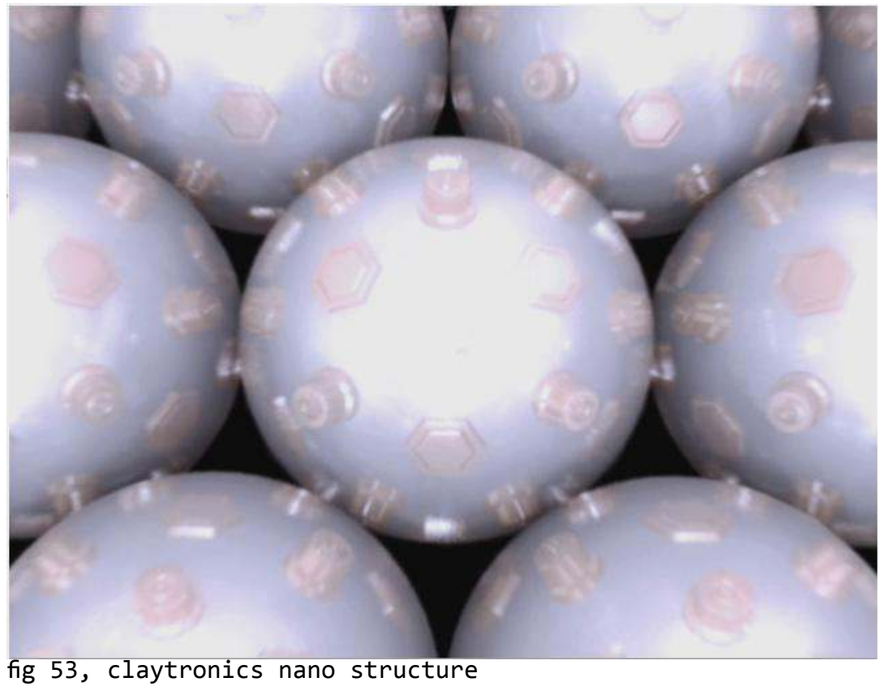


fig 53, claytronics nano structure

vision

Claytronics inside the unit

I decide to use claytronics to generate anything what I will need. Whole floor is created from claytronics matter. This floor is used as a source of matter for generating of objets. Under the floors are supply of claytronics for generating of anything. I also use this matter as a entrance door. When you are entering inside. Hoover board brings you undder the unit. Claytronics receive signat to open the hole in the floor. Floor is opening and hooverboard is connecting with unit. After connection is drone fixed with unit as a space ships to space station. Now you can fluently step inside your unit. After entering the floor is again rebuilt and hole is filled. Your hoower board can stay joined or can fly for anything what you need.

Bearing structure for units

Searching the structure for units

I were keping idea of zorbing ball and trying to find some self bearing structure. I wan to also provide thermal insulation abilities. I were looking for inspiration in membranes strucutres.

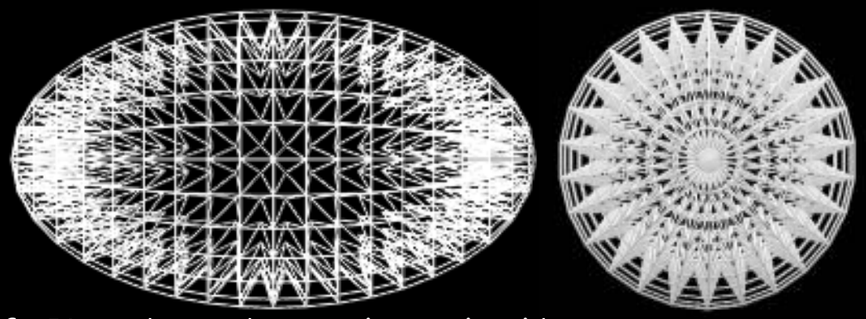


fig 54, membranes hang on inner piramid

_inner membrane hangs on piramid support which are integrated in the main bearing structure with horizontal and vertical carbon rings. Exterior membrane is fixed at the rings. Space between both membrane is filled by vacuum. The thickness of structure is too huge.

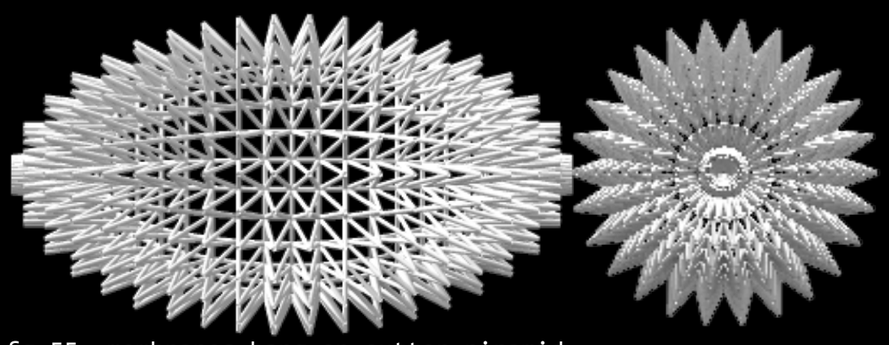


fig 55, membranes hang on outter piramid

_this is similar system as previous. There is only differences in supporting the sheets. The sheets are placed on outter side and fixed at the points. Inner surface is created with panels which are inserted inside the inner bearing grid. Gab between surfaces - vacuum

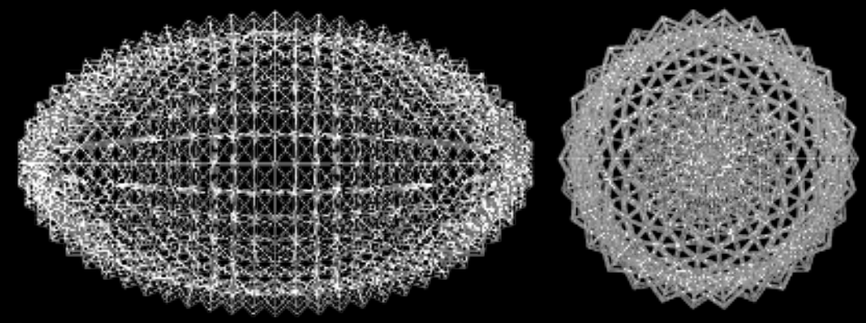


fig 56, membranes hang on both sides

_this is combination of both prewious systems. Both sides are covered with sheets. This system is functionall but extremly robust. It is not suitable for the strucutre.

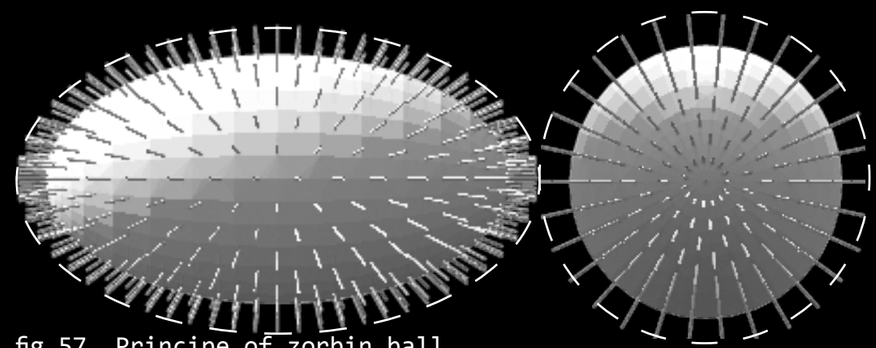


fig 57, Principe of zorbin ball

_this structure is the lightes version of all these systems. There are two sheets which are separated with bearing rod. The gab between could be filled with vacuum or other other insulating gas. Thickness is still enormous.

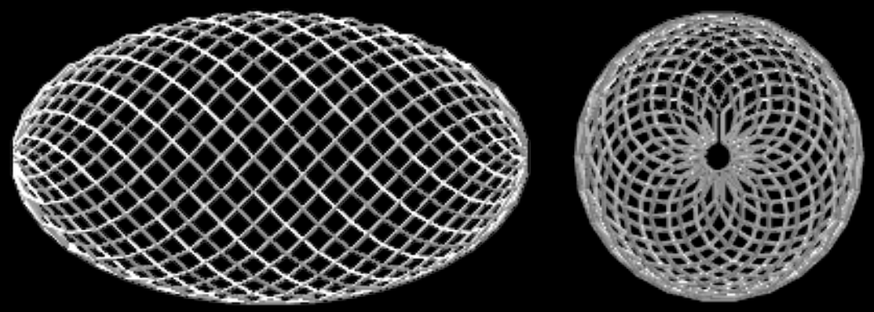


fig 58, membranes hang on inner piramid

_the second type of structure is bearig light weight frame from carbon. Grid is filled with glass panel filled with vacuum. This structure is thick. Technology of this structure is quite oldfashion and not adequet the idea of building.

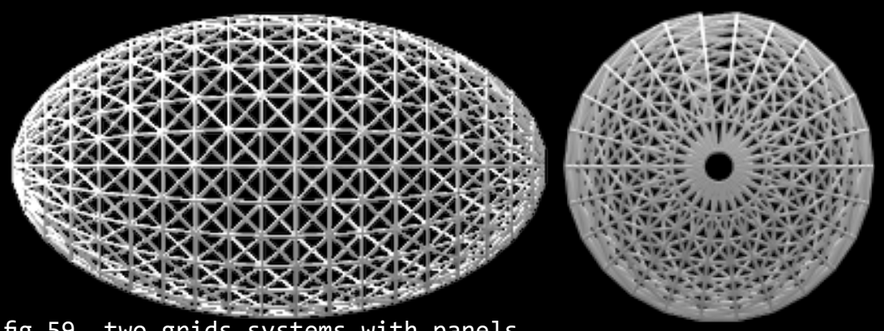
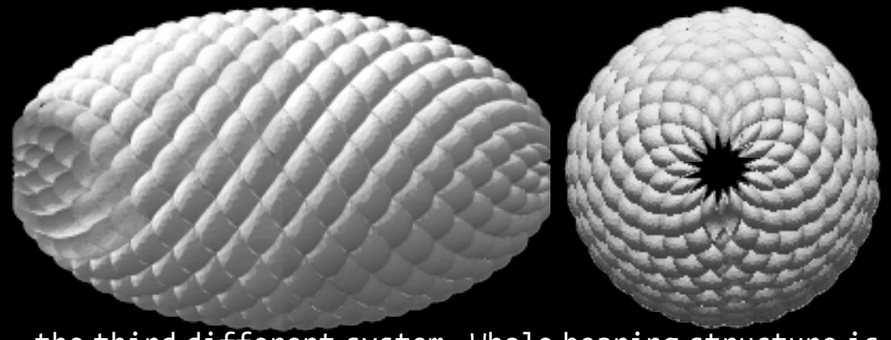


fig 59, two grids systems with panels

_struccture with two different bearing systems. Benefit of this strucuture is ability to conduct electricity throug whole mass and insulate inner space against the magnetic field. Finishing is again from the glass panels.



_ the third different system. Whole bearing structure is soft structure. There is no steel just light air pillows joined to each other. This structure is light but still fat.

I found inspiration in pneumatic strucutres where the thicknes of wall is around milimeters not centimeters. As a exhample I choose

fig 61, pneumatic room

I focused to searching optimal thick surface as is used in pneumatic structures. I discovered Graphen. This material can be extremly thick and extremly bearable. This material can be printed in nano scale and create nano bearing grinders.

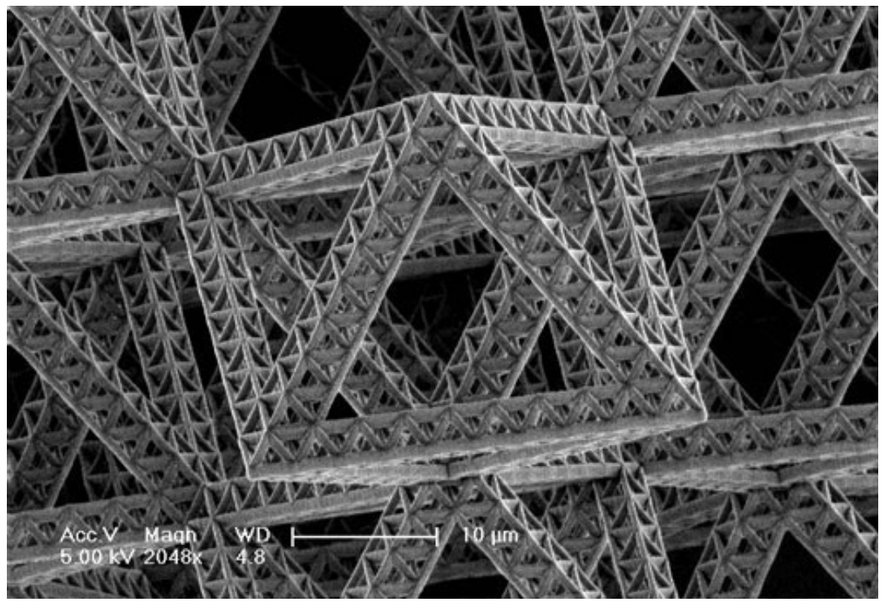


fig 62, Nano grinder

We are already print structures in nano scale and use other nano technologies to each other. Also the last Nobel prize was given to scientist who do researching in nano technology. It is also reason why I believe that this technology will be widely used in architecture. Nowdays we are using nano technologies as finish material. For exhample as a self cleaning windows, water insulation layers and etc. Nano technology also beats the new era of photovoltaic panels. These tini technology could cover surface and be invisible and generate electricity. I decide use this thechnologies for surface. The surface can be thick around few milimeters and be able bear whole strucutre. He is also able to lead electricity. Displays could be also integrate inside the strucutre. This is the future of making structures.

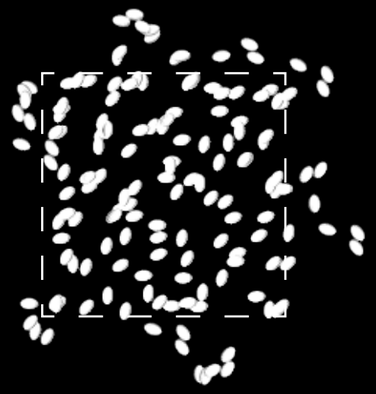
Building mass

Due to levitation and free moving in space building can be modified in real time. Basic Manhattan model keeps the strict site border but this borders can be broken because structure is airy and let the sun and air go down the street. This building isn‘t mass but airy structure. Units can be composed to different forms. Units can move towards the strong win by the top or they can be grouped together to minimal mass. Units can levitate above the streets they can create different spatial pattern. This architecture is dynamic and creating dynamic space. This structere isn‘t only functional but can create new dynamic architecture. Number of units can be modified. Units can be added or removed. Users of these units can decite where they want to be. They can fly upper or lover. But the movements up or down require electricity. When is the unit fixed at one place this levitating has no electricity consumption. This levitating using mesier effect and supraconductivity. When the user decide to change the position litte change in magnetic field is required. It can be done by changin the current in field.

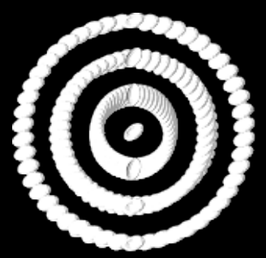
Searching the structure for units

I were keping idea of zorbing ball and trying to find some self bearing structure. I wan to also provide thermal insulation abilities. I were looking for inspiration in membranes strucutres.

_bounded form



_open form



_radial form

_ _ _ _

_site border

fig 63, floor patterns M 1:750

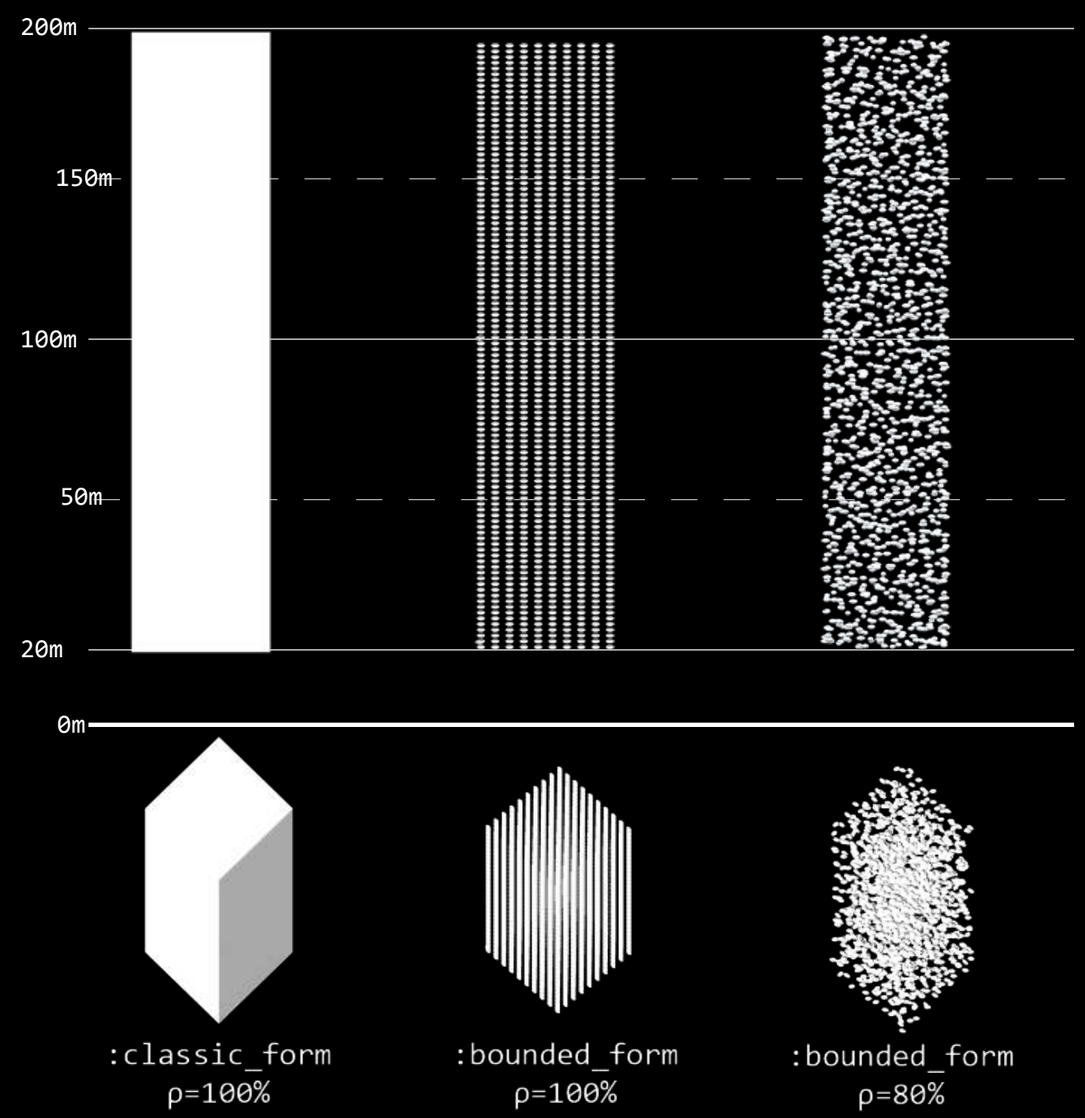


fig 64, different patterns, elevations

vision

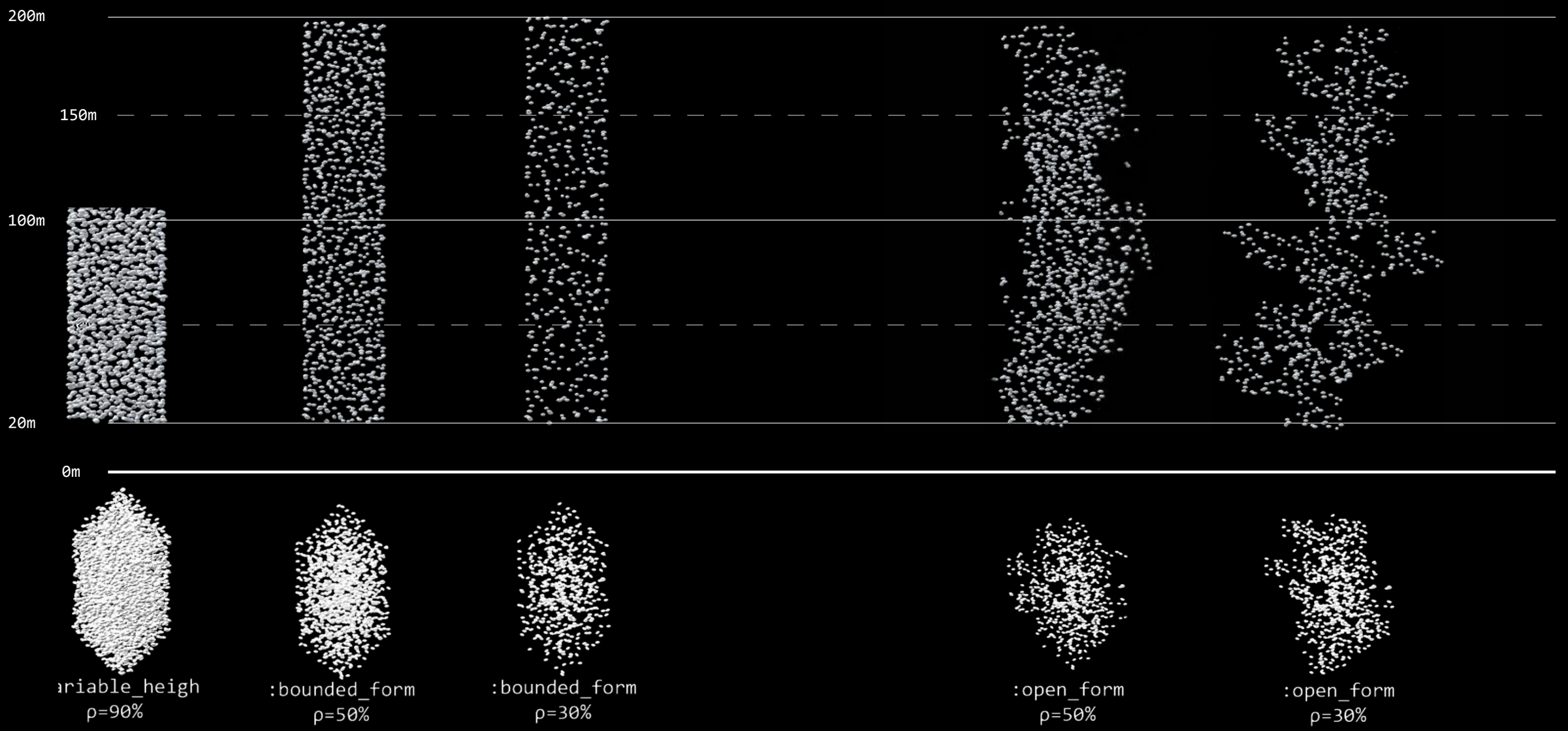


fig 64, different patterns, elevations

vision

fig 64, different patterns, elevations

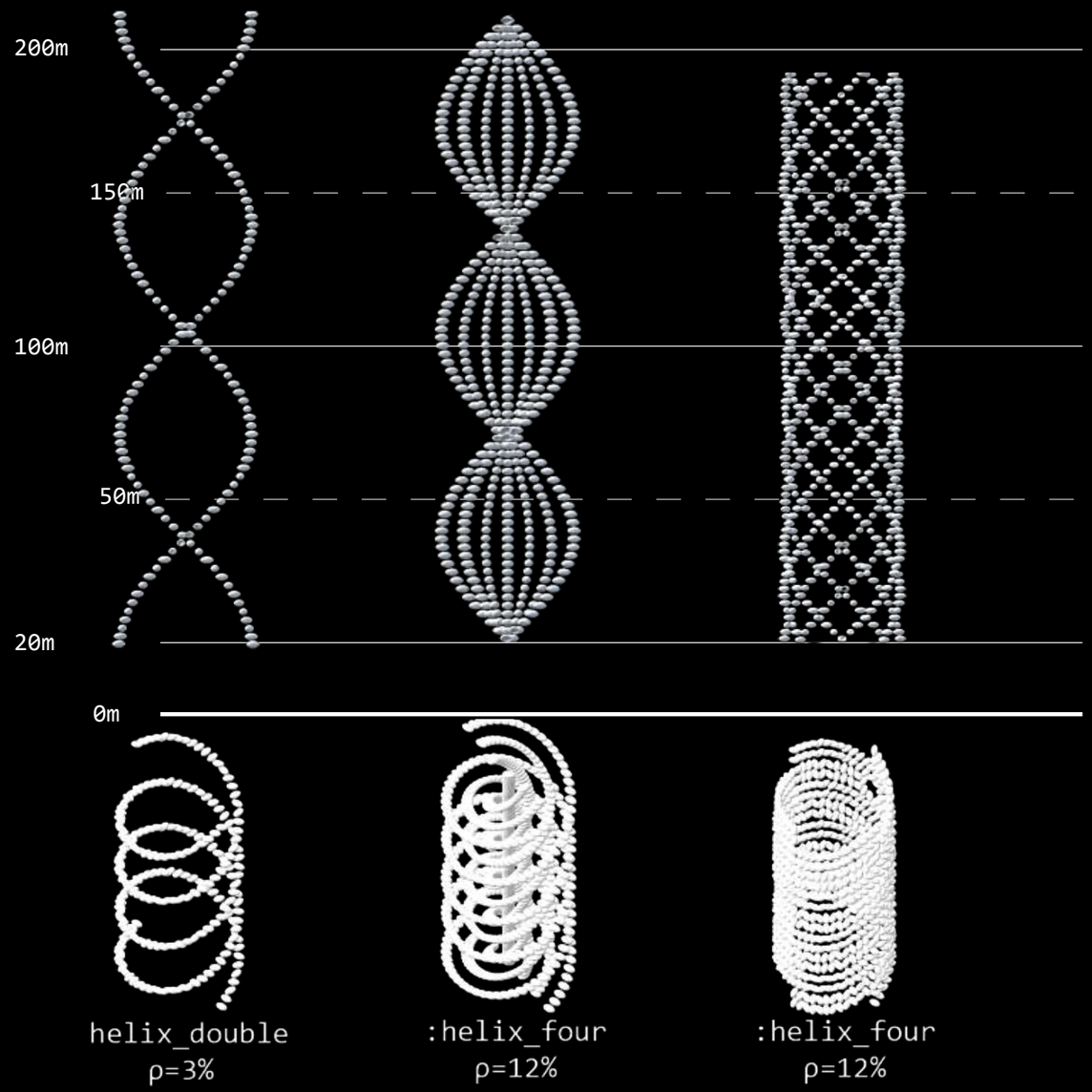


fig 64, different patterns, elevations

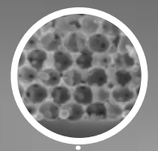
Final form of building is free because buildin is dynamic. Building is levitating in space and the area on the ground is free for public. There are located only ports for hooverboards which are landing there. The lowest unit is hooverin aroun 20m above the ground. All units are not made in place but in the docks or on the places which are reachable by supply without any problems. Because when you are constructing or deconstructing nowdays tower in the city you need to dam street and do some restrictions in transport. Another negative fluence is lot of noise, dust and heavy traffic. The same thing is happening also when you are deconstructing building. My designed metod is more friendly. All units will be assemled in docks or on the sea. Boats will be 3D printers and all necessarry material will by delievered by boats or by drones. Also the units will be moved from this printers to final destination by drones. Tis system has many advantages. You can adding or removing units durring the times or you can just move the unit to other place in the city.

Technical supply

All technical supplement is done by autonomous drones. All waste is collected in one place in unit and than collected from outer side by technical drones.

vision

_nano bearing structure

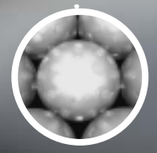


_nano FVP

_suitable for Human 2.0.

_integrate screen surface

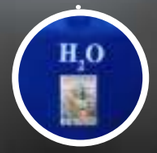
_carbon filters



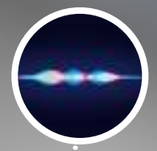
_claytronics matter
programable matter

_emergency supply

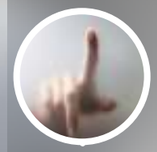
_faeces storage



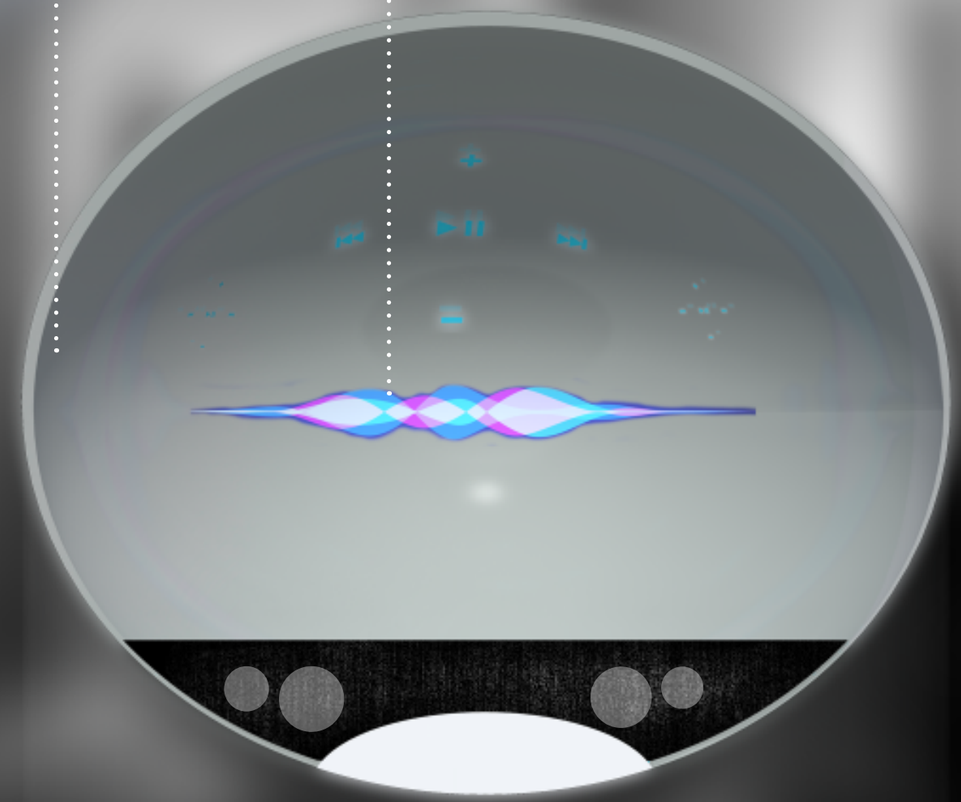
_H20 tank

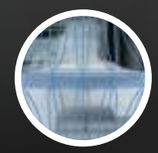


_AI interface



_transparency control





_quantum levitation

fig 65, typical floor section

vision

How does the unit work diagram

Assembling the require equip-
ment/disassembling non using
equipment.

Assembled mass from claytronics

Toilette is generate on demand.
Urine is recycled and used as a
drinking water. Feces are pac-
ked, stored and than collect by
drones.

entering inside the unit. Flor
is opening.

after approache is floor clo-
sing.

fig 66, How does the unit work

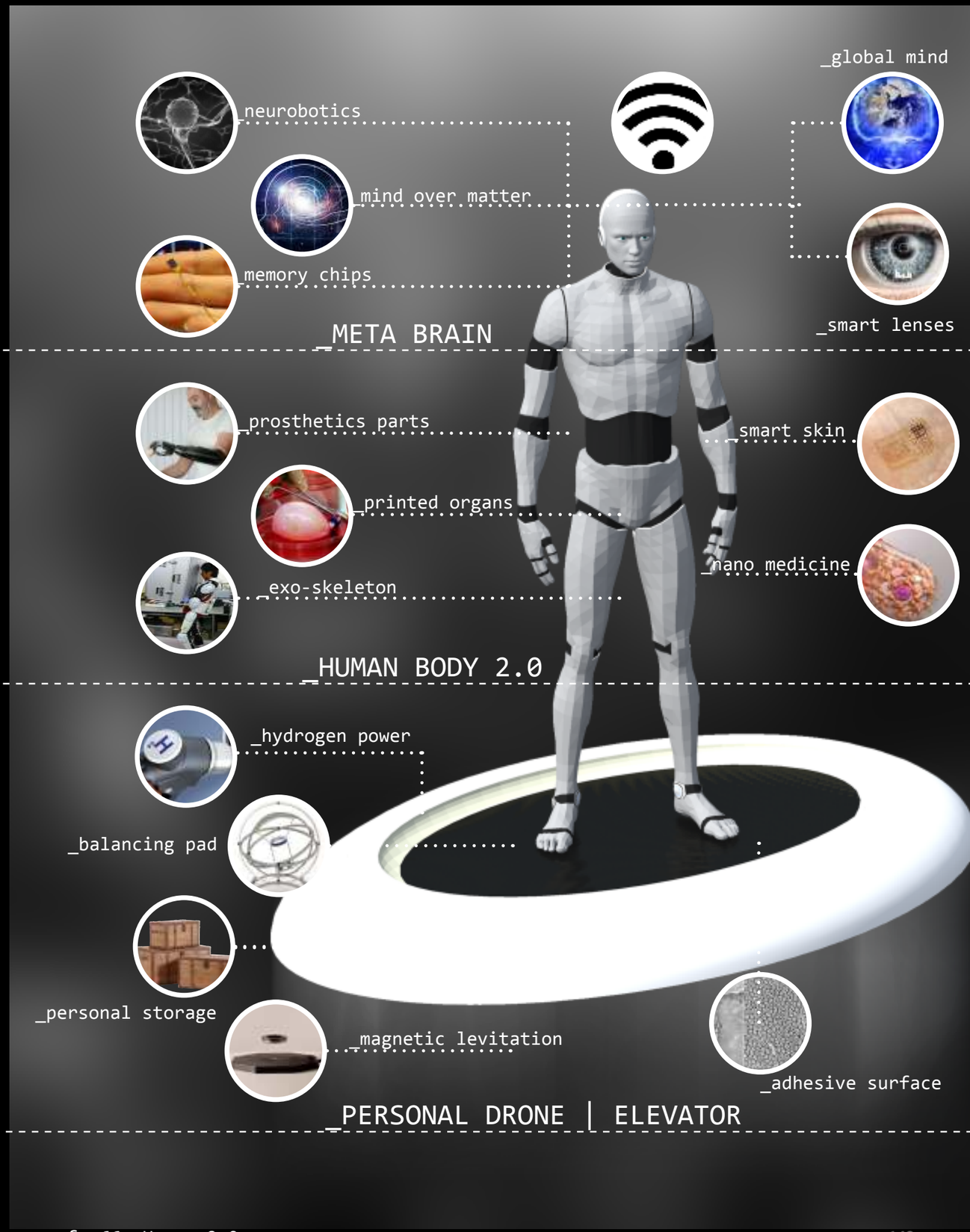


fig 66, Human 2.0

vision

Final question how to delievere food

Inspiration was found in medicine. When you are in coma you are not able to eat as a usually. You are feeding directly inside the stommick or by infusion. Second aspect of feeding is growing population and insufficient resources. We are wasting lot of foodstuff and on the opposite side of the Earth are people dying due to starvation. Also when we are counting with global 10 bilion population we really hawe to change the eating habbits. There is no place for wasting. Ray Kurzweill in his book wrote about direct energy delievery. This system work simply. You have some nanobots with energy substances in your body. You can inspire this nanobots from the air or you can drink it in water. These small helpers are monitoring human body and dose energy when is need. There is no wastig and is completly functional. Of course that you can enjoy yor favourite dinner in restaurant but the nowdays meal will be really expensive and rare. You don‘t have to affraid about loosing taste.These small nanobots will active feeling in your brain that you are eating for exhample your favourite burger. This was the last part of functional modell of future living.

Final short description

This project is located at Manhattan, Lexington Avenue 610. The New York City is exhample of typical world Megacity. Analysis provide information about future trends and nowdays situation. I were finding answers to this task. Building was designed hand by hang with this informations. I decide to design building in VR but finally we are already living in VR. Next decision was situate this building into the end of this century. Because technology which I using is in research or only predicted. Decision to design building for this future era was based on analysis and fynding different ways to the same target. This is a theoretical school work and it is reason why I decide demonstrate how the technology will change the humanity. I also want to demonstrate that the architecture is not only about designig nice building but also about finding ways and combinations all branches in one mass.

Short building desription

The result is dynamic apartmen building. It is collection of hundreds living units. These units are levitating in space. Levitation using quantum levitation technology. Each unit is $12m^2$ large and has eliptical shape. Bearing structure is combination of printed nanomaterials into one mass. There is no physical equipment inside. All equipment is generated from programmable matter on demand. Other surfaces are augmenter directly onto human retina or inside the brain. This technology allow simulate anything. Simulation is used for simulating office enviromental also. Users are getting inside this units by personal hoovering boards. Unit is suitable for one or two persons. This design is based on population prediction. Whole structure reacting to outter enviromental. Units are formed by users or by system. During strog wind or storms are autonomously groupped together or shaped into ideal formation. Units can kepp site boundary or fly ower this boundary. Numbers of units is variable they can be added or removed. Units are printed in docks and delievered by drones. Units are completly sustainable. They are using same system for water recycling as is used at ISS. Feces treatment is also solved similar way. Feces are packed and collected by drones. Units can be shared. When you leave your units it can be occupied by other user. When you come back the hoover will take you to another free units. All personal equipments is stored inside the personal hoover. Setting of layout of room is stored in sotrage and atumatically uploaded when you reach the unit. Are clothes are generating by programming matter so than you need not any wardrobes.

fig 67, perspective

Feedback

This project is complex and covering each part of human beeing. It was difficult to throw off all nowdays habbits and design something different. Some parts of projects are not corresponding with the futures technologies or designs. But this concept is still open to finishing. Main question is if we are not crossing border which shouldn‘t be beated.

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zimní semestr 2016_2017

České vysoké učení technické v Praze, Fakulta architektury

2/ ZADÁNÍ diplomové práce

Mgr. program navazující

jméno a příjmení: Ondřej Tomšů

datum narození: 20. Května 1989

akademický rok / semestr: 2016/2017 – zimní semestr
obor: AU
ústav: 15116 Kabinet modelového projektování
vedoucí diplomové práce: doc. Ing. Arch. Miloš Florián, Ph.D.

téma diplomové práce: Mrakodrap 3.0, Lexington ave. 610, NY

zadání diplomové práce:

1/ popis zadání projektu a očekávaného cíle řešení
Mrakodrap čtyř dimenzí. Stavba ve virtuální, rozšířené a fyzické realitě. Lokace objektu: Lexington avenue 610, NY. Vize budoucího lidského bytí a decentralizace reflektující současné společensko-technologické změny včetně jejich dopadu na plánování architektury. Cílem projektu je dokázat nezbytnost propojení nových virtuálních technologií s architekturou.

2/
Pro AU/ součástí zadání bude jasně a konkrétně specifikovaný stavební program
Jedná se o polyfunkční stavbu mrakodrapu. Prostorové uspořádání jednotlivých funkcí v hmotě stavby bude proměnné.

3/ popis závěrečného výsledku, výstupy a měřítka zpracování
Teoretický koncept virtuálního světa v textové formě

Situace	1: 500 – 1: 25 000*
Půdorysy typického podlaží	1: 100 – 1:750*
Typické řezy	1: 100 – 1:750*
Pohledy	1: 100 – 1:750*
Vizualizace	

**měřítka výkresů budou popřípadě přizpůsobena v závislosti na velikosti prezentačního tabla.*

4/ seznam dalších dohodnutých částí projektu (model)

model v adekvátním měřítku k velikosti objektu
CD

Datum a podpis studenta 4.10.2016

Datum a podpis vedoucího DP 5.10.2016

Datum a podpis děkana FA ČVUT
oddělením dne 25-10-2016

registrováno studijním
10.10.16

ČESKÉ VYSOKÉ UČENÍ TECHNICKÉ V PRAZE
FAKULTA ARCHITEKTURY

AUTOR, DIPLOMANT: bc. Ondřej Tomšů
AR 2016/2017, ZS

NÁZEV DIPLOMOVÉ PRÁCE:
(ČJ)
MRAKODRAP 3.0, LEXINGTON AVE. 610, NY
(AJ)
SKYCRAPER 3.0, LEXINGTON AVE. 610, NY
JAZYK PRÁCE: ANGLICKÝ

Vedoucí práce: **Oponent práce:**	**DOC.ING.ARCH. MILOŠ FLORIÁN, Ph.d.** **Ústav:15116 Kabinet modelového projektování** **prof. Ing. arch. Vladimír Šimkovič, Ph.D.**
Klíčová slova (česká):	Mrakodrap, New York City, Budoucnost, Levitace, Koncept
Anotace (česká):	Mrakodrap určený pro druhou polovinu tohoto stolení. Zohledňující veškeré predikované technologie a vývoje lidstva do roku 2100.
Anotace (anglická):	Skycraper for next half of this century. Building is based on prediction still the 2100.

Prohlášení autora

Prohlašuji, že jsem předloženou diplomovou práci vypracoval samostatně a že jsem uvedl veškeré použité informační zdroje v souladu s „Metodickým pokynem o etické přípravě vysokoškolských závěrečných prací.“

V Praze dne 12.1.2017

podpis autora-diplomanta

Tento dokument je nedílnou a povinnou součástí diplomové práce / portfolia a CD.

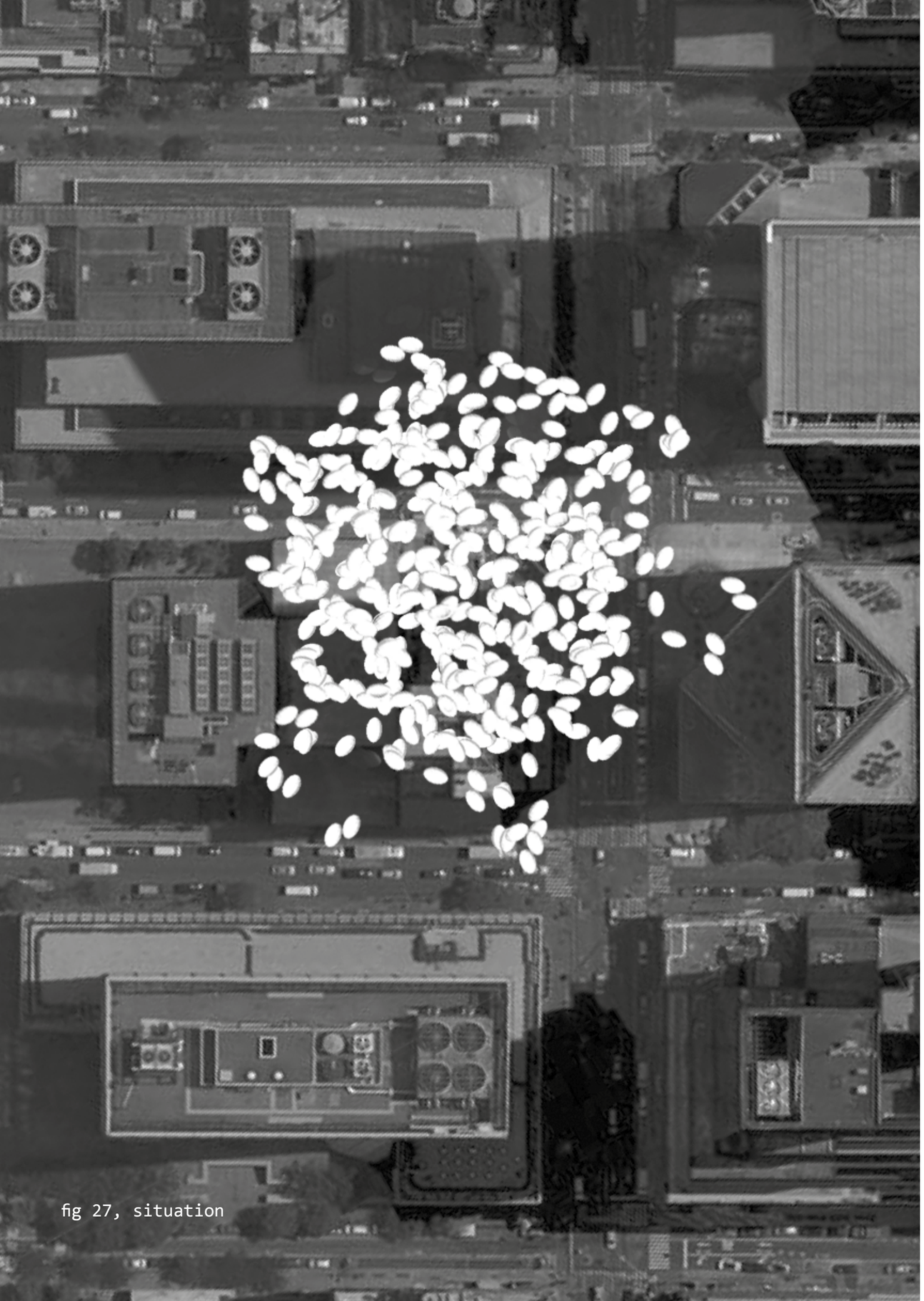

fig 27, situation

online content

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