The future of public transport, imagined by students of Design Academy Eindhoven

A collaboration with the Dutch Ministry of Infrastructure and the Environment

<table>
<thead>
<tr>
<th>Slow technology development</th>
<th>Fast technology development</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Club of Rome 2.0</td>
<td>2. Responsible Prosperity</td>
</tr>
<tr>
<td>4. Divided Society</td>
<td>3. Land of the Free</td>
</tr>
</tbody>
</table>

Collective society

Private society
<table>
<thead>
<tr>
<th>5</th>
<th>A balancing act</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>The ministry’s brief</td>
</tr>
<tr>
<td>12</td>
<td>1. Club of Rome 2.0</td>
</tr>
<tr>
<td>18</td>
<td>2. Responsible Prosperity</td>
</tr>
<tr>
<td>26</td>
<td>3. Land of the Free</td>
</tr>
<tr>
<td>32</td>
<td>4. Divided Society</td>
</tr>
<tr>
<td>38</td>
<td>The crystal ball</td>
</tr>
<tr>
<td>40</td>
<td>Credits</td>
</tr>
</tbody>
</table>
Sixteen international master students at Design Academy Eindhoven dived into the future of the Dutch public transport system, and concluded their research with some imaginative presentations, of which this publication gives an impression.

Why would a South Korean, an American, and a French design student study the Dutch public transport system? And why would their ideas offer valid information to the experts who currently brood on this topic? Before answering those questions, let’s introduce the commissioner, the brief, and let’s introduce the students.

Planning the future of public transport in the Netherlands is always on the agenda of the Dutch Ministry of Infrastructure and the Environment, this goes without saying. As technological innovation speeds ahead and some major social developments take place in society, the urge has become strong to review the whole public transport system for the next generations. Therefore the ministry has set up the Programme Future of Public Transport, in which various parties collaborate. Current trends were analysed and four possible scenarios have been defined.

And here we are: at the request of the Ministry students of Design Academy Eindhoven have brooded on the question how to best represent the given scenarios and draw possible conclusions from them. This tentative project took place between January and March 2016.

The design brief was both complex and clear. What will the world look like in 2040? And which consequences will this prospect have for the decisions that need to be prepared? A smooth working public transport system requires knowing the facts, it requires some visionary thinking, and it requires a valid translation of innovative ideas into viable options.

We, the master departments of Design Academy Eindhoven, were delighted to work on such a demanding topic, which contains many inspiring research topics. Design has numerous guises in today’s world; the field has broadened its scope far beyond the traditional confines. Designers and design theorists not only work in a world in flux, they are also challenged to take on many different roles: from the inventors and producers of tools for modern life, to the composers of strategies; from thinkers and makers, to social activists. Designers are faced with complex themes that cannot be reduced to readily solvable design problems. More and more they will be crossing the boundaries of their disciplines, while the themes they work on deserve the critical views of a broad range of well-informed creative minds.

The master departments at Design Academy Eindhoven aim at offering students the tools they need to research and analyze such complex themes, and develop personal views on possible interventions, both to improve their individual design practice and to create (multidisciplinary) collaborations. To ensure a close connection with the real world outside school, the masters regularly work with external institutions, such as governments, companies, and NGO’s. One of these external commissioners is the Dutch Ministry of Infrastructure and the Environment. Usually the students work within thematic design studios. Within these general frames the students explore how to appropriate the assignments given by their tutors, come up with their own questions, to then follow a personal artistic design path. When we work with an external commissioner the same demands apply, while others are added. The commissioner offers the brief, the general theme, and the commissioner usually asks specific questions. Some aspects of a commissioner’s brief are carved in stone, and need to be addressed as such. Those aspects of a brief and the reality of a given context force student to not only rely on personal intuitions, but also question the feasibility of any idea that might pop up during the design process.
INNOVATIVE THINKING

Diving into the future of the Dutch public transport system required research of current developments in Europe that might influence tomorrow’s needs. Knowing the facts, and developing the guts to think beyond the already known — that was the main aim of this project from an educational perspective. The students who participated come from various backgrounds, ranging from China and South Africa, to Germany, Eastern Europe and the Netherlands, and they aspire for different careers, ranging from product designers to social designers and theorists. The coming together of so many backgrounds and interests is consciously chosen, as this might trigger unexpected perspectives on the theme and thus surprising outcomes.

When introducing the commission to the students in January 2016, this image was shown by Gerard Snel, program manager at the Ministry of Infrastructure and the Environment: “I’ll be happy to give you innovative thinking. What are the guidelines?”

The humorous undertone of the image resides in the obvious contrast between innovative thinking, which by necessity implies a free spirit, and a strict frame that seemingly prevents innovative thinking. On closer inspection the employee actually is right to ask for the guidelines. After all, there’s no such thing as total freedom, and if it would exist, it would not even be desirable. The kind of freedom that is needed in artistic production only ‘happens’ within the contours of a frame, within the confines of a given context (culturally, socially, technically). Such a frame was provided by the four scenarios that the commissioner presented as guideline for the students.

Four scenarios, four prospects of society in 2040. Will technology have taken an unimagined flight, or will it, instead, come to a halt? Will a sense of community reign, or will a deep longing for privacy set the agenda? Can authorities steer developments into a wished-for direction, or should such developments have their own course? One thing seems clear: for any democratic government an affordable transport of a country’s residents is one of the main topics to deal with. Countries such as the Netherlands have a high reputation when it comes to providing various services to the less wealthy part of its population, who would otherwise be secluded from good health care, schooling, and be denied access to various means of transportation.

Gerard Snel showed a compelling image in which the subtle battle between guidelines and innovative thinking is depicted. We would like to end this introduction with the artwork ‘A Balancing Act’ of Job Koelewijn, which subtly represents the objectives of our education: balancing reality and the imagination.

Job Koelewijn has created a representation of not only the surrounding high-rise buildings of New York City, but even more so a representation of the human longing to always reach higher and higher. The NYC buildings resulted from the dreams of many creatives. Holding a fragile stack of trays and glasses amidst those buildings is a powerful gesture in which reality is tempted and gravity is defied. The gesture is a testimony of man’s capacity to compete with natural forces; at the same time the gesture is immensely humane, fragile, open for failures.

During the two-year course the students are tempted to make such powerful gestures; time and again, by looking at the surrounding world intensely and trying to discover what is not visible at first sight. They learn how to put things upside down, question the question, how to defy gravity if needed, and how to embrace and learn from possible failures.

There were some Do’s and Don’ts in this project. In one of the presentations the commissioner mentioned a small list of notions that were not expected: ‘prediction’, ‘desirable future’, ‘strategy’, ‘science fiction’, ‘trend analysis’. The Don’ts were followed with Do’s: ‘visionary and plausible stories that create a coherent image of possible future developments’; ‘means for strategy development’; ‘imagination and realism’.

There was a rather subtle overlap between what was expected and not expected, an overlap that the students wholeheartedly jumped into. Some projects border on ‘science fiction’, and instead of coming up with ‘plausible stories’ and ‘realism’, one group even went so far to include a Shaman to fantasize on the future. Some plans reveal ideas for a ‘desirable future’; Understandably. How else would it have been possible to create ‘visionary’ stories? Imagination and realism fought a battle and the imagination won.

The students not only designed representations of the scenarios, but also reflected on the commissioner’s brief and each scenario’s validity, for instance by addressing the underlying assumptions and the political contexts in which specific scenarios might become reality. They also reflected on the brief by showing clearly which scenarios they considered more desirable than others. In the course of this project the students learned a lot, not only about the interconnectedness of developments in today’s world, not only about the need to both know the facts and trust the imagination. They also learned about the way policy makers need to relate to many stakeholders, need to prepare future decisions for various political realities, and need to balance — in their own special way — personal hopes for the future, the imaginations of many, and the strict demands provided by the prospects of reality.

Will the commissioner profit from the students’ projects? Only time will tell. The final results don’t offer unambiguous answers, nor practical conclusions, but they do offer what can be expected of young designers: food for thought.
What is the future of the Dutch public transport system? How is public transport organised in 2040, and what that is related to other aspects of society?

Trying to predict the future is a necessity for policymakers whose job it is to look ahead in order to prepare for tomorrow’s needs. Planning the future of public transport in the Netherlands has been on the agenda of the Dutch Ministry of Infrastructure and the Environment for years. With the aim to develop a brief guideline for students work, a group of sixteen students was divided into four, each of them consisting of a multidisciplinary mix from 3 masters departments. The project team was looking at the start of the project. Further information was provided by the Design Academy Eindhoven in January 2016.

Many brainstorming sessions and expert meetings were organised with various parties, including scientists, transporters, a group of young visionaries (the young changers), traveller organisations, and others. As a result, an outline was formulated of the many forces that will influence means of transport, ranging from economic, socio-cultural and technological forces. Various questions were addressed, such as: Which trends in urbanization might influence the accessibility of cars? What demographic changes will occur in different regions of the country? What are the consequences of technological innovations in personal transport and information systems?

In view of all the forces that will play a role in future transport developments, four major trends were isolated and organized along two intersecting axes to create a matrix of possible future scenarios.

Opposing trends of social collectivization but prioritizing individualism; that of rapid and slow technological development and uptake.

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In this stage of the project, at the end of 2016, the project team was looking for stimulating ideas and out of the box thinking that could link unexpected representations and viable proposals to the four anticipated scenarios. And thus a collaboration started with Design Academy Eindhoven in January 2016.

The four scenarios would serve as a guideline for students work. A group of sixteen students was divided into four, each of them consisting of a multidisciplinary mix from 3 masters departments.

The graph and texts below were taken from the commissioner’s brief and presentation at the start of the project. Further information was provided by the team’s experts.

Starting point: the Netherlands and Europe failed in international-economic competition, new TECHNOLOGIES are slowly developed and even more slowly introduced. The opportunities of e.g. data technology are not seized. Because the transition to renewable ENERGY FAILS (solar and wind energy stagnate), oil is very expensive. Climate change continues, so we get floods, heat and fires. We have no technologies to tackle this. The ECONOMY suffers. Urbanization and rural flight continue, vulnerable residential areas arise, both in urban and rural area gated communities and declining neighborhoods co-exist. Socially, the divide gets sharper between those that are self-reliant and those that are not. Success is a choice. The haves live in the right places, inside and outside the city, the have nots dwell on the bad areas, and do the tedious jobs. Crime is increasing. Also in MOBILITY, technology development is slow. Self-steering cars can only run on highways with special infrastructure that connect to the gated communities. These cars are very expensive and therefore only for the happy few — they can travel long distances, and work if trapped in traffic jams. It will be a lot more crowded on the highways and feeder roads. At the transport nodes around the city, self-steering car drivers change to premium PT, or take over the control of their car. In addition, a large stream of minibuses, function to direct lines, with a substantial price tag for consumers. For the rest, PT is sober and functional, many bus with long commutes. International traffic is impeded by extensive security checks. The ROLE OF GOVERNMENT is a whole lot smaller. The market is developing concepts for the happy few. The free student travelling card has been abolished. So there are fewer students. The government is not steering much in transport. Vulnerability: the social stability (30% haves versus 70% have nots) is limited, particularly because social rise is difficult due to the separate worlds people live in.
The future of public transport

The Programme travels into the future by forecasting and backcasting. It forecasts by thinking through trends in public transport demand and supply, and backcasts by thinking through possible futures (scenarios) to extract an understanding of the implications and possible consequences of the choices we make about the public transport system. This is done with attention paid to the broader mobility context in which public transport functions, as well as the broader trends in mobility that we can now foresee: self-driving cars, shared vehicle use, new mobility providers (Google, Uber, etc.), renewed attention to slow transportation (biking and walking), the drive for clean energy, etc. Mobility will change, and as a specific part of the mobility system, public transport will need to change along with it.

In developing the scenarios together with scientists and practitioners, the emphasis will be on depicting possible futures with out-of-the-box thinking in images, words and stories — the lingua franca of civil servants and strategists from the public transport sector. Visions of public transport in 2040 should stimulate our imagination of a future that is ultimately unpredictable, but partly foreseeable today. Students of DAE are expected to create representations of the four scenarios that help us imagine these possible futures. We expect these representations to not only encompass public transport, but also the worlds in which people live and public transportation operates. The ways in which they live, work and recreate, and the connections they make will be of vital importance. As will transport nodes, maps, information devices. All of the relevant things that the Ministry cannot, at this moment, imagine.

Expectations

The future of public transport

Starting point: Netherlands and Northwest Europe are internationally competitive. Society is characterized by individualism and private property. The economy is growing through entrepreneurship, many freelancers, and technology development. Energy becomes green and personal, we store our own solar energy in batteries, so scarcity of energy disappears. The social disparities are increasing, but due to economic growth, social contradictions are not very sharp. Spatial planning is characterized by diversification: individual initiative gets all the space. The big cities are popular places, but so expensive that they are accessible only to the richest. Well-earners live in the suburbs, in newly developed housing areas (Vinex), but also move to the suburban environs which urbanize. A car in front of the door is more important than a cafe around the corner. The less wealthy live in satellite cities like Almere, Zoetermeer or Purmerend, in somewhat impoverished neighborhoods. More greenish oriented entrepreneurs live in cities like Groningen or Limburg. For recreation, people go to the countryside. The wealthy have their own country house and forest. Mobility increases due to the many self-steering private cars, which half of the time drive around empty to serve all members of the family. Spatial distribution further increases mobility. At the same time, the 24/7 economy with many flexible freelancers, somewhat mitigates the peak hours. To mitigate road congestion, public transport provides train services between the major cities. For the first and last miles, mobility providers offer e-bikes, city public transport or self-steering taxis. Rail-bound public transport is self-steering and therefore profitable to operate. In cities with more than 300.000 inhabitants, self-steering trams and buses serve the people without a car. In smaller cities and suburban area, self-steering buses crisscross neighborhoods, demand-driven, it takes a bit long but you’ll get there. In rural area is no public transport anymore. The least wealthy people who cannot afford commercial transport, receive a small mobility budget. Internationally, a limited number of HS-lines exist alongside a network of international highways with separate services for high-speed automated driving. The government levies a congestion charge on major roads and in the center of major cities to regulate the pressure on scarce space. The role and budget of the government are limited, especially in public transport. The major goals of PT is to keep the beautiful urban centers accessible and livable, with good connections to the intersections where self-steering cars enter the congestion charge area. Vulnerability: social stability is not strong, the emphasis on individual prosperity might bring the less-wealthy to claim their share.

Starting point: Netherlands and Northwest Europe are internationally competitive, we are good at R&D and innovation, technology solves many problems. Energy is no longer a problem, it is available everywhere: everyone is his own producer, sharing his energy, get it from his neighbor. The government guarantees the grid. The economy with many flexible freelancers, spatial distribution further increases cars, which half of the time drive around due to the many self-steering private cars. Modern public transport serves the city: self-steering shared cars, self-steering buses and trams which can feed in the national rail network and open up a large area with frequent light-train services. Self-steering trains connect the major cities. Outside these areas, mobility providers offer a range of services, including collective transport and self-steering cars that will be connected on the major highways. In the rural areas, some communities are taking on the role of mobility provider. Internationally, a network has developed of self-driving high-speed rail lines, its density dependent upon the question whether airlines have managed to shift to carbon neutrality. The government sets clear limits to ensure sustainability and quality of life. Within these confines, there is much room for innovation by the mobility providers who use big data for custom solutions. It also regulates a minimum of accessibility for all, e.g. via a mobility budget. Vulnerability: prosperity rests on technology — when that fails there is a major crisis.

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Due to rising pressure from the public, European governments decided not to bail out the banks after the century’s second financial crash in its first two decades. Yet as an economic union more than anything, this of course put additional tension on an already fragile EU. Countries started backing out from the union; borders closed again, trade routes were disrupted, and the environment was caught in an impossible bind. The world of 2040 is the aftermath of this crisis.

Governments throughout Europe have come under increasing pressure to stabilize the ecological situation of continued global warming. Despite the fact that the environment cannot be contained or appropriately dealt with within the limits national borders, a crumbling EU presents no other option. The Dutch, with their long-standing vulnerability and resilience to rising waters, were forced to take extreme measures.

Resources were consolidated, which in the Netherlands means first and foremost dry land. Large dykes were built to protect the Randstad, and two other protected areas of urban density were formed, one in the north of the country and the other in the south. The territories outside these areas have been left in highly precarious, semi-autonomous situations. Some land has been given completely back to the sea, while the state of matter of others simply can’t be guaranteed.

Such infrastructural necessities have placed an incredible strain on the economy at large. Stagnation is a lesser evil than other futures that have presented themselves, and no matter within or without the Netherlands’ new urban fortresses, scarcity is rule of the day. Too expensive to maintain, national rail lines have stopped running to remote places, now commuting only either between the three urban areas or within their respective bounds. Due to the lack of space and mounting ecological issues, cars have been banned in cities.

Despite its increased security and relative sense of normality, not everyone has chosen to live within the urban conurbations. Rural areas outside the centers present an alternative way of life, one that is — by necessity — more communal and inventive. Communes become the predominant urban-social morphology where the ‘maker movement’ is taken to an extreme with innovative, upcycled solutions to everyday life. Communal buses run throughout the rural areas and are led, operated and maintained by the communities they connect.

After some time of relative stability in this new territorial order, the Dutch government started to reflect on many of these ideas and initiatives. A progressive government was voted in. The need to manage scarcity has remained and consumption has been regulated. A nationwide basic income was installed — the first in Europe — allowing people to focus on self-sufficiency. We see a drop in the production of goods due to a heavy ongoing austerity leftover from the financial collapse. Imports have also been dramatically reduced due to the collapse of Europe’s trade networks. With the increase of time due to basic income and a stagnating economy we see people invest more of themselves into creative exploration and recreation. The economy has been forced to adopt different mechanisms: instead of money, people increasingly exchange skills and resources.

Lost & Found offices located in now-abandoned rural train stations have come to form an integral part of the socioeconomic fabric of daily life. Here’s how it works:

Someone finds an object in a bus who gives it to the bus driver. The bus driver collects all the objects found and brings them to the closest Lost & Found office located. The community member working there registers each object. Where was it found? When was it found? According to its function and its primary materials, the object will be sorted into two categories. It then gets a label and is sorted into the box registered with both. If the original owner doesn’t claim the object by a certain time, it travels to one of the community owned material depots. Every Monday, one person per depot comes to the Lost & Found office and picks up the expired objects. Plastic objects go to the plastic depot, wood to wood, and so on. Each commune has at least one of these material depots. If one commune needs a material they don’t have, they can exchange with nearby depots.

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Responsible Prosperity

1. WORK IS GONE
Robotization and basic income effectively take care of the bottom two tiers of Maslow's hierarchy of needs. Without the need for such basic activities, what does such a society occupy itself with?

2. SUBSISTENCE CULTURE TRANSFORMS INTO CULTURE OF "BEING"
Spiral dynamics is a post-modern, pan-dimensional model of human development that proposes eight levels of increasingly complex human value systems that we move through in personal and societal development. The first six levels are based on a subsistence culture in which decisions are informed by physical survival. The final two levels propose a culture of an enhanced consciousness in which the collective and individual time is comprised of rituals: from the global dissemination of relevant information for public projects, to those more individual and personal activities.

3. A MULTIPLICITY OF SUBJECTIVITIES LEADS TO DEEPER UNDERSTANDING
The future of public transport

9. EXPERIENCE TRUMPS EFFICIENCY
"To create a close connection between surroundings and behaviour, urban concentration is indispensable. Those who think that tele-communications and rapid transportation are going to break up the shared life of the conurbations have little understanding of humanity's true needs. In contrast to the garden city idea favoured by most modern architects, we envisage covered cities in which the layout of roads and separate buildings will be replaced by a continuous spatial construction... Far from a return to nature — from the notion of living in a garden, as a solitary aristocrat once did — we see in such immense constructions the possibility of overcoming nature and of regulating the climate, light and sounds in these different spaces in accordance with our desires."

4. "I AM BECAUSE WE ARE"

18 19

1867 Isaac Newton lays down the principles for mechanical time in Principia Mathematica.

5. OPEN SOURCE KNOWLEDGE
Ubuntu is the name of Mark Shuttleworth's open source computer operating system. The collective philosophy and social structure of ubuntu will also permeate the forces driving intellectual growth. Instead of a surveillance society obsessed with stealing private data, an open system will see people volunteering and producing relevant information for public projects, to contribute to the commons.

6. PLAY AS MOTIVATION
Without having to work, people are organically drawn to fields of interest. Rather than being motivated by money or status, people start engaging with their interests through a primal instinct for play. Play, as defined by Johan Huizinga, opens a book in his book, is a means of learning and producing culture. The world functions on ludic voluntarism.

7. CITIES OF PLAY
In his vision for New Babylon, Constant Nieuwenhuys lays out how the future of cities is based on a utopian vision of an expressionist city.

8. TECHNOLOGY IS INVISIBLE
The future is not going to look too different from today. Technology as we understand it now, as new shiny gadgets and mad commercial rushes, will slowly cease to exist. Technology will become more flexible, our entire day-night routine will be restructured. There will be more time on our hands and no real rush. This will lead to a radical shift in perception.

Our current notion of linear time as an absolute physical reality only dates back 300 years to Newton. Linear time comprises units that are only applied to us by machines. Transport has been historically based on linear units of time and space, but mobility is the unit of time and space itself.

In 2040, time is on our side. Collective time will be the time society runs on. "Time when we’re all here". Instead of units, collective time is comprised of rituals: from greetings, tea-making, meals, celebrations and holidays, to those more individual and creative like knowing how long to wait by smoking a cigarette or looking at the sunset for as long as it takes to finish a drink. Beyond 2040, time is flexible and simultaneous.

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2016 500-year anniversary of Thomas More’s *Utopia*.
2017 Refugee crisis across Europe continues. Design students are tasked with building pop-up mosques in art museums. Refugees are slowly incorporated into society, given language and job training. Cultural awareness and tolerance is fostered through personal relationships.
2018 The rapid pace of technological development continues with a further economic towards the innovation economy. National governments throughout Europe facilitate connections between business and arts academies to broaden the social inclusiveness of their innovations.
2020 Due to global unrest, the European Union makes a complete changeover to renewable energy sources, two years earlier than planned.
2021 Further in its move towards sustainability, the EU declares natural preservation zones and starts work on restoring them.
2022 Having weaned itself off oil, the EU starts to face other raw material shortages and adopts a union-wide circular economy strategy. Retrofitting and the optimisation of existing buildings become one of the primary economic motors.
2023 Quantum innovation in the silicon industry leads to drastic reductions in energy consumption and increase in performance.
2024 Jobs are becoming increasingly roboticized. Due to fear of unemployment, the EU slows down its research, development and uptake. Demand for IT skills continues to increase, with college studies becoming more popular over the internet.
2025 The first machine for the industrial production of graphene fabrics is developed.
2026 Due to its green zones and curtailment of urban sprawl, the development of cities throughout Europe shift towards higher density, with smaller living spaces and larger communal areas.
2027 The EU innovation embargo on robotisation is lifted. Basic income is introduced.
2028 Everyone starts carrying a Privacy Button.
2029 Innovations in genetic biotechnology develop modular power plants on leaves, using biotechnology to produce energy and bind carbon dioxide to buildings. Whole surfaces of buildings are covered in vegetation.
2030 The Dutch set a maximum duration of the work-day to be four-hours long. People spend more time on wellbeing and health. Mass meditation becomes popular.
2031 Psychological research confirms that genuine happiness is based on meaningful relationships. The world starts slowing down, time begins to stretch.
2032 Volunteer human teachers become highly sought after, particularly for the humanities and social sciences. Pedagogical focus is placed on psychology and self-actualisation.
2033 Africa becomes the breadbasket and solar power generator of the world. Through big data and intelligent supply systems, food surplus and waste is reduced to negligible. The last of the colonial economic restraints are dissolved. Europe is increasingly trying to find favour again with its former African colonies to access preferential food and energy prices.
2034 A new type of food, a thumb that 3D prints into your mouth, becomes a popular street food.
2035 The first nuclear fusion reactors are built. Abundant energy on the energy becomes standard.
2036 Centralized politics becomes a form of communism based on radical participation and grassroots micro-hierarchies. Public infrastructure is treated as a communal asset.
2037 Time is becoming increasingly irrelevant.

People no longer work, just play and sometimes volunteer. The African notion of Ubuntu spreads across the globe as a social philosophy.
2038 Omniscient Day is inaugurated as a global holiday in which people engage with different perspectives through augmented reality.
2039 A new type of compass GPS is introduced to facilitate people who share interests to meet and connect.
2039 For those seeking absolute loneliness for a period of meditation, wandering houses in the wilderness are introduced and quickly become the preferred destination.
2040 Public transport becomes sporadic and on demand. Railcars are replaced by many different kinds of temporary houses, schools, museums, playrooms, etc. By making things physically mobile, the rail network itself becomes a social destination, a random ride to wherever is all in the journey.
3. The Network

When a butterfly bats its wings in the Amazon, the ripple effects spread through the hyper-intelligent system of nature and to plant a kiss on your forehead. When the singularity dawned on humankind and computers were plugged into nature, giving us the access to knowledge of an infinity of things, The Network was born. Access to an Infinity is pretty useless if you don’t know where to look. This is why humans who thrive on information — librarians — have dedicated their lives to sifting through The Network for matters of concern. With these insights, humans are protected from impending danger, our understanding of science and the universe continues to expand, and infrastructure webs connect humans for their mutual benefit. The NS web of intra-city travel exists on The Network and, using a database of every form of transport mobile accessible in a given geographic area, provides instant access to all parts of the city for any human. For safety and congestion reasons, within the central part of the city only non-motorised transport and shared self-driving vehicles such as buses are available. However the further out towards the suburbs, the more exotic the mobiles become, including horses, drones, row boats, carriages and even large dogs. Never fear, The Network will always catch you.

5. Free Time

A donkey sits in a barn staring at two bales of hay. Both are as far from its nose, both taste just as delicious and both are supremely nutritious. Spoilt for choice, the donkey sits woefully staring at the bales of hay, unable to decide which to munch first. This is the blessing and curse of Free Time. In a world of absolute abundance, it is easy to complacency to turn into negative stagnation and laziness. Idle thoughts from nowhere start doing wheelies in the mind. Without societal structure to the day, willing humans out of bed to go to work, humans need to find their own compass within their relationships and communities. For some, this is instinctual; for others, centuries of slavery to mechanical time must be shrugged. Go with the flow of Free Time. Speeding it up, slowing it down, all depends on how fast you move. The trick is to keep moving. It doesn’t need to be far, but stay active in mind and body. Seek out friends and family; make new rituals of togetherness. Don’t worry too much about which hay bale to eat, what’s the worst that can happen? The Network will always catch you.

7. The Hermit

Stuff. Humans have boxes, drawers, cupboards, garages, houses full of stuff. Stuff that collects dust. Stuff to trip over in the dark. Stuff to deal with other stuff. Stuff that is the residue of the destructive reign of capitalism, now useless. Stuff that filled our lives. Stuff that held us back. Stuff that separated us from each other. All round stuffiness. Like a drug addict, The Hermit is the human who detoxing from stuff. Living out in nature, alone, The Hermit renews their relationship with the rhythms of the Earth. Starts breathing in tune with the sigh of the wind. And slowly turns from their external worldview of stuff, to the interior language of self. The self that is interconnected with every living organism in the universe. When The Hermit can see their place in The Network, they will return from the wild with a profound sense of self-actualisation, harmony and temperance. A unique understanding of the multiple subjective viewpoints of every living and non-living thing, gives The Hermit the ability to transcend opposites. Energy comes from within, shining light into the darkest stuffiness.

9. The Volunteer

Although robotisation has taken care of the most mundane, repetitive and unpleasant forms of human labour, there are still a few vocations that benefit from a human presence. These include caregiving, eatery hosting, foundation phase learning, entertainment and all manners of creativity. To give is to get a hundredfold. Humans who, perhaps through the assistance of The Shaman, have self-identified as teaching or caring spirits have found an outlet for their karmic purpose by volunteering at schools and other organisations. All manner of creative briefs are fed through the playrooms that invite kidults of all ages to come together in groups and tackle passion projects. The NS train system has become the central connecting system of The Volunteer. Innumerable organisations and ventures start on the trains as pop-ups before finding a more permanent location if it foresees a long-term venture.

12. The Player

Play is older than humankind itself. Humans are born of the playing of genes. Play is both liberation and the creation of order, it is neither everyday life nor for any material gain. Both language and culture are products of infinite play and pattern seeking. The Player is the most prismatic essence of the human being, and our most advanced societal consciousness. With food, shelter and energy in abundance, The Player is completely liberated to pursue the infinite possibilities of their creative consciousness, in as much time as they please. With child-like simplicity The Player reaches for the world and inspects it a new, as if never seen before. The Player is curious, never cynical, and thrilled by the presence of another player with which to multiply Infinity upon Infinity. As oracle, The Player points to new beginnings and fresh perspectives. It is invite to step outside of convention, ask silly questions, dance in the streets, follow a new passion and talk to strangers. Jump on the first train you can hail, with the NS’s ever-changing joyride of playrooms, eateries and museums from which to choose. Who knows where you’ll end up?

18. The Shaman

All of humankind’s truth is written in our code: our DNA. Spun in infinitesimal helixes through every cell of our skin, bones, organs, hair and eyes, lies the entire history of our being since the beginning. Living in, on and between the human cells are just as many, if not more, microorganisms including bacteria, fungi, yeasts and viruses. Humans are walking ecosystems. Our consciousness is the result of the genomic interaction with all of these beings. The Shaman plays the human ecosystem like a conductor leads an orchestra. The Shaman straddles the worlds of the most advanced microbiology and medical applications, as well as the instinctual world of primordial awareness. It is a calling. One is chosen to be The Shaman by your dreams. When The Oracle Reveals The Shaman, it can mean two things: has the dream alighted on your sleep? Do not be afraid, this is a great blessing and will lead to ultimate life satisfaction. Go know to the place that was revealed to you. Or else, you are overwhelmed by confusion. Your DNA might be in disarray. Perhaps you are plagued by fatigue or mysterious pains. Maybe you simply don’t know what to do with yourself. The Shaman awaits your visit.
Land of the Free

INTRODUCTION
Technology continues to develop at its current pace, or faster. Renewable energy will be widely available (i.e. affordable) within a generation, and technology is, for all intents and purposes, a reliable indicator of economic development (i.e. wealth). All this is thanks to privatization as the primary engine for growth in a self-managing free market and its corollary of structural disposity. How do we get there? Why, it’s not difficult to imagine a schism within the EU as the relatively stable northern countries look to unburden themselves from the volatile and porous south once and for all.

Sociopolitical mechanisms have been crafted to ensure a trickle-down effect, though. Furthermore, this rapid rate of technological development has effectively outpaced projections and/or indices and resulted in real gains in quality-of-life metrics. Ultra-high-speed connectivity resulted in real gains in quality-of-life outcomes, outpaced projections and/or indices and the result that the workplace will be increasingly decentralized/remote. While robust broadband connectivity will allow for the broad adoption of telepresence — holographic, perhaps — will take the widening of the open road can pay to take the wheel in the parunar hinterlands, though insurance fees make for a prohibitively expensive diversion. The rest will settle for convincingly realistic SD simulators — you can smell the motor oil, according to the ads — or the timeless pleasure of cycling, which is integrated into the system (after all, those exercise quotas won’t meet themselves).

As in every other domain, the elite are the apex predators when it comes to mobility, perhaps more noticeably in the shared, publicly maintained infrastructure of the transit network than anywhere else. Within the city center and immediate periphery, plebian pods literally steer clear of privately owned pods, which are granted priority second to only emergency vehicles.

Meanwhile, the luxury automobile is the veritable apotheosis of a status symbol: the 0.1% can indulge themselves with illicit vintage sportscars, which they stockpile or exhibit like a Jeff Koons sculpture; their genetically perfect children make headlines for drag-racing maglev trains and the occasional spectacularly fatal wreck.

Megan Dinius
Ray Hu
Dasha Tsapenko
Kostas Lambridis

TRANSPORTATION
Personal Rapid Transit is not only here, it’s boring. Within a few years, a closed network of self-steering pods had paved over the legacy of what has been described as a century-long traffic jam. Once the pilot programs demonstrated the obvious benefits of autonomous mobility, private cars were phased out with nary a government incentive, which is to say, nothing of the instantly obsolete buses, trams, and taxis.

Indeed, door-to-door mobility is faster, safer, and cheaper than anyone could have imagined: with customizable ambition and variable capacity (SMXLL), they are fit for passengers from 100 days to 100 years old. Yet the advent of immersive VR technology means that there are fewer places to go: even middle-class citizens can summon work and leisure alike via the cloud, such that the sensation of movement has become largely heterotopic — therapeutic, even.

Theoretically frictionless though it may be, the lightly monitored network invites complaints about hiccupps in wi-fi and untimely delays, as well as faulty biometrics and susceptibility to viruses and hackers. As with any sufficiently “magical” technology, the veneer is peeling at the corners.

Conversely, those who miss the freedom of the open road can pay to take the wheel in the parunar hinterlands, though insurance fees make for a prohibitively expensive diversion. The rest will settle for convincingly realistic SD simulators — you can smell the motor oil, according to the ads — or the timeless pleasure of cycling, which is integrated into the system (after all, those exercise quotas won’t meet themselves).

As in every other domain, the elite are the apex predators when it comes to mobility, perhaps more noticeably in the shared, publicly maintained infrastructure of the transit network than anywhere else. Within the city center and immediate periphery, plebian pods literally steer clear of privately owned pods, which are granted priority second to only emergency vehicles. Much like air travel today, “jetsetters” rack up rewards miles aboard the Hyperloop during weekly or daily round-trip journeys. The average consumer, on the other hand, faces the familiar challenge of outsmarting fare algorithms when it comes to ultra-high-speed rail.

ENTERTAINMENT
The digital media landscape will continue to evolve at a dizzying pace. With more leisure time on our collective hands, society is characterized by a kind of quantum ennui: a state of simultaneously more and less boredom than ever thought possible. To the extent that life itself — living, working, and eating — takes place online, it’s no longer a question of opting in or out, just a matter of social security, barely recognizable as a form of taxation, or welfare.

Privacy and security concerns remain paramount. Hacking and espionage will inevitably escalate, but even egregious transgressions will be a blip on the sprawling radar of the internet at large as users grow increasingly inured to exposure. In the future, a seedy underbelly, dark alley, red light district, and nightclub bathroom all happen to look like a lot your music app feature, with one-click emoji-reactions and all.

WORKING
While raw materials — in terms of availability, yield and harvesting — will remain a limiting factor, the globalized free market will spur incremental improvements in efficiency and sustainability. Just-in-time, on-demand, and/or ultra-localized production will erode the existing economies of scale as production and consumption converge again in cities, neighborhoods, and homes.

Activity-tracking and timekeeping software will ensure a high degree of accountability, while robust broadband connectivity will allow for the broad adoption of telepresence — holographic, perhaps — with the result that the workplace will be increasingly decentralized/remote. Alongside a stable tertiary (service) sector, the coming decades will see substantial growth in the quaternary (knowledge) sector, as well as a nascent/hypothetical quinary (executive/specialist) sector, which comprises the elites. Unskilled labor will be performed by an underclass of those who have the unenviable job of doing what the robots cannot. Although job satisfaction may decrease, the average citizen will work fewer hours and have more leisure time.

LIVING
Socialized housing will serve as a kind of basic income, guaranteed for all — all card-carrying citizens, that is — at the expense of proud home ownership, now strictly the domain of the 1% who can afford to indulge in bygone material culture. Consumerism has become sublimated into pixels and voxels. Upward mobility take two. Learn how to access to digital libraries of decor, licensed (or, in more generous terms, “shared”) for a nominal fee.

Interfaces encroach on windows and walls. An inhabitant will have to buy back his or her ambient displays from intelligent advertisers. The fully-carpeted smart home may be free, but dwelling will cost you; sanctuary by subscription. Gaia abides as the masses prefer UAV-POV VR escapism. Meanwhile, untold outsiders haunt the interstices of society at large, the nodal underworld not exactly off-the-grid but rather peeking and poking through its seams.

The future of public transport The future of transport


2019 Successful Secession. Green is the new Black: Solar power costs plummet to stable grid parity. An Invisible Hand: EU North-south block governments pass deregulatory legislation to promote entrepreneurship and better compete with the US and China.


2032 Going South. Turing Tester is 100 years old. Yet the advent of immersive VR mean that there are fewer responsibility? More in Store: Batteries become industry standard for energy storage.

2032 Going South. Turing Tester is 100 years old. Yet the advent of immersive VR mean that there are fewer responsibility? More in Store: Batteries become industry standard for energy storage.

2037 Neither Here nor There. What gets attacked in VR mail for 26 bytoonics. H-Loog to be Integrated into Trans-African net. Back to the future? Seven years behind schedule, new high-speed inter-capital transit system “Magnet Bagel” is launched.
BUSINESSMAN

[Anna de Vries
Call time: 00:03:02]
MAN: "...yeah I can't believe my Model V20 had a software malfunction this morning... it's not booting up, it keeps freezing... I should've called the Tesla service center when the OS was acting funny last week, during the ride to Ilio’s... Yeah, the fancy Italian place, where they serve real meat, not just powder – it was an important client.

“They’re sending a ‘mechnician’ today... they said between 10 and 2, typical... Yeah I can keep an eye on him through the omnicam, he’ll just be in the garage anyway.

“Yeah I trust them, I know Thomas had that issue with the guy from Lexus but the insurance covered it, right? Anyway, the Tesla mechs are supposed to be good, even if they have scheduling issues..."

[Pod Arriving]
MAN: "Ah the Pod is here. It’s been ages since I’ve taken a public one... I’ve heard they’ve gotten better lately, but you never know...

...yeah even the public ones can take the fast lane in VIP mode, so I’ll make it to the station in time...

"Ciao."

[Call ended]
MAN walks out of his house, slamming the door shut. He makes a gesture with his hand next to the parked pod.

[Please Authenticate]

MAN: [muttering to self]: "Wow, it’s one of the old biochip scanners..."

[Pod: "Good morning Mr. Douhm!"
MAN: "Disable AI."
MAN looks around and takes a seat
MAN to self: "Well, it’s not leather, but at least it’s clean...

Pod begins driving
MAN: "News."

[Sync Preferences?]
MAN makes authentication gesture
Pod: [Dictates a series of headlines and news blurbs; man swipes after each one so as to dismiss it.]

[Text appears in Korean]
Message is sent

MAN: "Tindlist?"

MAN (annoyed; overenunciates): "Tind-List"

[Site Restricted]
MAN: "Override"

[!!! In accordance with the EU1 Decency Act of 2034, Chapter 4, Section 11, this content has been rated 18+ and cannot be viewed in a public vehicle.]

Man sighs

[Call from John Connor]
Man gestures to answer
MAN: "Hey."

"Yeah I’m on my way... Tesla’s sending tech support, I’m in a public pod this morning.

“‘Hey did you know that Tindlist is blocked in public pods?’

“No no, they can’t monitor me because I’m double-A elite... yeah, ever since that Googazon leak a few years back... laughs... well, they could be still be recording your half of the conversation."

[Arriving at destination: Amsterdam Noord Train HYP829 to Munich]

[!!! Delay +10mins]
MAN: "Shit, there’s a delay..."

[04 Finance Meeting
Rescheduled, 10a +15mins]
MAN: “It’s ok, Anna just rescheduled the teleconf...”

“You know, it’s crazy that we have the fastest vacuum train system in the world, but there’s still delays..."

Man gets out of the pod.
Pod is alone; AI reactivates

MAN: [Dictates a series of emails (sender, subject); man swipes after each one so as to dismiss it.]
The future of public transport

Neither Here Nor There

Tourist operators are in panic. Because of the enormous progress of the virtual reality devices over the last five years and especially latest product from the company based in Cupertino, the Vision 4S, laws of tourist business have changed forever.

According to the last survey, 67% of tourist now prefer to travel while still sitting on their sofa.
The gap between communities comes with many consequences on almost all levels of society, such as the rise of gated communities, a rise of criminality, and the development of different means of transportation. More and more, cities will be defined by borders, checkpoints and other thresholds. Those at the lower part of the social spectrum have developed ameliorative features, such as an increased notion of community and solidarity, to combat the obvious negative consequences of physical division.

These are only a few of the consequences we envision for the future. In our scenario we offer a timeline for various developments, by way of two animations, the implications and consequences of the trends we clearly see in 2016: a society that is focused on more privacy while technology develops at a slow pace. Finally we offer a few stories, which exemplify how developments have affected the daily lives of people.

Introduction scenario ‘Divided Society’
As a result of urbanization and rural flight vulnerable residential areas arise. In our future scenario, the urban metropolitan areas of the Netherlands are becoming cities within cities: divided in tribal neighborhoods and self-sufficient, gated communities.

The economy is suffering from a low technology/digitalization movement, a high privatization, and an ageing society. The decline of the productive population produces a hierarchy in society with many consequences, such as an increased notion of community and solidarity, to combat the obvious negative consequences of physical division.

The rift between the Absolutes and the Hybrids is immense, and will widen as time goes by.
The future of public transport
“Patient #486. The drawing is dominated by an abstract, organized, highly technologized as well as mechanized panopticon. A circular cell defined by an underlining border and controlled by a centralized digital hardware (implemented ID). The digital network allows a total control of the interior from a single point. The only possible way to leave the gated community is by the high-speed CRH380(L) to Paris and Berlin or the armed SUV/Family. The whole drawing is defined by borders, checkpoints and thresholds that point out a clear boundary of the individual’s inner world. The picture underlines the feeling of monopolization and heteronomy. The reigning colors are black and grey. Black is hiding the identity in the background. Personality loses its importance in front of the leading instance, authority, government or religion. Grey symbolizes self-denial: ‘obfuscation of one’s former self and depression’. In the left lower corner one can recognize two human beings connected with each other: one fully armed inside the gated community and the other one almost naked and insecure. The wall which is dividing the individuals, seems to act like a limiting magnet, attracting both women. The views are lowered and prevent the sight inside/outside the gated community. Especially the excluded woman expresses a highly emotional gesture. As a matter of fact she does not fit inside the technologized and transparent structured society because she is human. Technology banishes vividness. Her gesture is very emotional: her hand is in front of her chest as a protection of her heart in order to feel herself. Her face in particular her senses are blackened and make an interaction with her environment unattainable. Her back is emphasized by a bold line which is symbolizing a strong back. She is feeling pain caused by external circumstances but will not be destroyed by it. Both characters feel the dissociation. They are prohibited from being in contact with each other and other individuals. Inside the gated community exists a window where some rays of sunshine can break through. However the light rays shine towards the ground. It is not a guiding light at the horizon. It is rather an intellectual light referring to new ideas and consciousness.”

“That day I woke up as always, 4.30 AM, to the old ringtone on my Samsung phone-alarm clock. Which my dad bought before I was born and still works. I woke up cold. Could feel the breeze sneaking in through my bedroom’s wall. Our home is made from two old shipping containers. Which actually could do with some extra wool insulation as it can get cold inside and also we could hear the neighbors. This Iraqi couple that escaped a last-drop-of-oil-war, and on the other side a Venezuelan-Dutch family, the mum couldn’t handle South America’s extreme heat anymore and the father lost his old home to a flood somewhere in north Holland. I’m myself, I’m also an hybrid. My dad is English with Irish roots, my mum was Spanish and I was born in here. Mum died when I was three from a bacteria infection after one of the big storms. She left early but left me with a great name, Femke, which means ‘woman of peace’. Dad was never home, he worked long hours at a Rookworst factory. So basically I raised myself and younger brothers at the rough side of the wall. Making cash, selling recyclables in my area since I was like 5. Now I’m 24.

Ok, so I get out of bed, and dress up. I search for the old grey cashmere sweater I once found at a bench in the Central Station. It’s a bit fucked up but I still love it. So warm and soft. It probably belonged to a very sophisticated lady from a gated city. No time for breakfast, I jump on my bike and start the daily trip to the Organic Juicery at the Amsterdam Central Station. Takes me over an hour. I ride on the bike lane, which shares along the bus lane, a chunk of the old A5 highway into the capital. It’s cold, dark, dump and windy, but I’ve surely been through worse. I get to the station and find a spot for my bike.

Of course I use the Station’s back door, I go in after scanning the chip on my wrist. ‘Temporary visa’, ‘Yesss, but I was born here. I get to the juice bar, change into the uniform, and start selling organic raw juices from 6 AM. But that day something happens, I think I met someone.. I couldn’t see her face, she had her helmet and bulletproof clothes, but got me struck with her sophisticated, slow voice. ‘Een grote sinaasappelsap’ I kinda liked her so here we go, some extra juice. Ffff.. then I spilled some, oopsie daisy. She don’t care, she’s super cool. ‘Thank you, by the way I am Skylar’. I smile. ‘Nice to meet you Skylar. My name is Femke.’ “
In short: the principle of adhesion. solid material encrusted onto the glass… the surrounding environment; the traces of stuck; the speed and direction of wind insofar as it is related to and conditioned studying the raindrop itself, yes, but only were to predict the way raindrops fall: by thinking the future how we would if we dislodged, cohered with others and fall stuck to a windshield before they become the linearity of its path. Like raindrops in inertia may influence its speed, curvature... The horizon is littered with objects, each actions and the movements they will take. The more we know about how things move, the more we can believe in our unharmed, the Dutch are quite familiar to fare the 1973 OPEC crisis relatively being the only one in the Western world functions and plays its most important in this dual sense that scenario planning prepared for what may approach us. It’s something to where we want, but to be to resist its force, and sometimes even falls towards it, despite the fact that its up at its center. Indeed, not everything to all things, not everything actually ends up at its center. Indeed, not everything falls in that direction. There are ways to resist its force, and sometimes even others momentarily overtake it, shooting things back up at us. We therefore look to the future not just to know how to get something to where we want, but to be prepared for what may approach us. It’s in this dual sense that scenario planning functions and plays its most important role. Indeed, with its national oil company being the only one in the Western world to fare the 1973 OPEC crisis relatively unharmed, the Dutch are quite familiar with its practice and its values. So when the Dutch Ministry of Infrastructure and the Environment approached us with four scenarios of 2040 and requested that we envision the future of public transportation within them, we knew what we had to do. What you will find in this publication is four reflections on the role of public transportation in the Netherlands in 2040. Public transportation in the Netherlands is a relatively modern thing. Indeed, when the rail lines first started being laid in 1839, it was private; individual train companies were set up and competed with each other. It was only after the market had been created did these companies start being brought together under one common — indeed, public, state-run — framework. Today, the Netherlands has one of the most impressive public transportation systems in all of Europe. It’s far-reaching, integrated, reliable, and efficient. Public transportation has been fundamental to the Netherlands’ absolutely unique social pattern and urban morphology. Public transportation is crucial to maintaining the distinctiveness of local places while ensuring their equity. Yet the way public transportation configures the territory by articulating movement and the effects this has on society at large, it must be recognized, ultimately contingent upon a set of conditions being in place. Indeed, if the four visions presented were collectively distilled to give a single conclusion, this is it. We cannot know what tomorrow will bring. As authors Hans Ulrich Obrist, Shumon Basar and Douglas Copeland have recently proclaimed, we live in the age of earthquakes. As we know from the likes of OPEC, war and product service updates, the world can change overnight. So we should perhaps not expect the visualization of public transportation in 2040 to provide concrete recommendations for what should be done today. But by demonstrating how the future could unfold, visualizing scenarios lays bare the wider field of values in which choices being made today take place. The work here is meant to serve as a medium for reflection, which it accomplishes not only by asking difficult questions, but speculating on the reality they herald. What if social and spatial equity is no longer treated as a national priority? What sorts of effects might larger-scale geopolitical transformations have on national service providers? What if the resources necessary to maintain the network in its current state become unattainable? What if the country’s physical geography changes due to global warming? These images presented here are meant to burn themselves onto the back of our mind. As much as scenarios are, by definition, meant to be free of vested interest and personal desire, by treating such intimate issues of social justice and development, the projects here demonstrate the impossibility of such an objective stance. Instead, what the visions present here is a dual condition: each scenario has its respectively desirable and undesirable features, yet demonstrate how the future will force us to move beyond the ethical and political limits we have in place today. Indeed, times have changed since public transportation has come into being, and they will likely only continue to change, at an exponential rate no less. As we move into the future we will need to take risks; we will be forced to speculate in the face of uncertainty and the unknown. We should not shy away from such a task, no matter how daunting it may be. Indeed, it is our public duty. If we were originally presented with an empty map, a matrix of two trends, we hope to have started shading it in, filling out its contours, visualizing not only the out its differences between point ‘a’ and ‘b’, but sorts of decisions, what it might take to get to one, and not the other. Let us imagine ourselves at the middle-point of the matrix, where the two axes cross one another. Each one of these scenarios visualized here start there and incrementally move forward in one of the diagonal directions. Let us learn from their paths to inform the ones we will be responsible for directing.

Nick Axel
Participating in the project, which took place January – March 2016, were sixteen first year students, three tutors, and two guest tutors of the Master departments at Design Academy Eindhoven, being Contextual Design (CD), Social Design (SD), and Design Curating & Writing (DC&W).

STUDENTS
1. Club of Rome 2.0
DCW: Marina Pace (Italy)
DCW: Carla Zimmermann (Germany)
SD: Mark Henning (South Africa)
CD: Doeke van Nuil (The Netherlands)

2. Land of the Free
DCW: Megan Dinius (United Kingdom/The Netherlands)
DCW: Raymond Hu (United States of America)
CD: Kostas Lambridis (Greece)
SD: Dasha Tsapenko (Ukraine)

3. Divided Society
DCW: Ana Lisa Alperovich-O'Brien (United Kingdom)
SD: Jiayu Wu (China)
CD: Lu Fan (China)
SD: Sara Kadesch (Germany)

4. Responsible Prosperity
CD: Theophile Blandet (France)
CD: Sein Sakaguchi (Japan)
SD: Sebastian Lilge (Germany)
DCW: Nadine Botha (South Africa)

TUTORS
Nick Axel (theorist)
Jan Konings (designer)
Rianne Makkink (architect)

LECTURERS
John Körmeling (architect)
Arthur Roeloffzen (graphic designer)

HEADS OF THE DEPARTMENTS
Louise Schouwenberg (CD)
Jan Boelen (SD)
Justin McGuirk & Alice Twemlow (DC&W)

PROGRAMME MANAGER
MASTERS
Judith Konz

COMMISSIONER