

MILAN 2033. SEEDS OF THE FUTURE - HOW THE CURRENT RESEARCH AND DESIGN EXPERIMENTS WILL SHAPE OUR LIVES IN THE CITIES OF TOMORROW.

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INTRODUCTION

In 1863 it has been founded in Milan the original nucleus of what will become the Politecnico di Milano. 150 years later, in addition to celebrating this anniversary, the university took advantage of this important event to create, over the course of an entire year, a journey to rediscover its origins and identity and to reflect on its role in the future development of the city and its surrounding territory.

It is within this framework that *Milan 2033. Seeds of the future. 150 years of the Politecnico di Milano* took shape: an exhibition, in collaboration with the Triennale di Milano, which looks to our next twenty years and how the research and design experiments currently underway will shape our lives in the city, in Milan and in other realities throughout the world. “How will we travel, how will we live and how we will work (and study) in 2033?” and moreover “Which new communication technologies, materials and energy sources will our everyday world be made up of?” These are the questions that were put to a group of professors and researchers from different disciplines called on to take part in a large scientific committee.

METHODS

It has been possible to address the theoretical and creative effort implied by those challenging questions only through an extensive multidisciplinary approach: for this reason *Seeds of the future* is a collective exhibition, involving a scientific committee of 50 professors in 12 Departments of the Politecnico di Milano in a debate between different areas of knowledge.

A true multidisciplinary approach, however, is always easier to mention than to achieve. The main question to address was a feasible way for an institution like the Politecnico di Milano, where so many different disciplines and backgrounds coexist, to design coherent visions for the future. Actually architects often have visions related to the physical dimension of the city (the so called bricks and mortar approach), engineers nurture technological visions, but are often hyper-specialized and therefore necessarily partial, and designers are more interested in forms of social innovation.

Various impromptu meetings took place on three different topics of our everyday lives -*living, working, moving around*- and three transversal themes that permeate our daily life -*energy, new materials and ICT technologies*. The produced material, characterized by a "multiple and different point of view of the city", constituted the foundation for the subsequent work: on one hand to organize and sort the collected fragments of the future, and on the other to tell the story of the emerged contents, avoiding cryptic or didactic styles and languages.

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To work on this systematization, two variables were borrowed from the European research project *Spread 2050 Sustainable Lifestyle¹* and used to organize the collected material. One variable is linked to the kinds of technology and the other to the leading values and principles supporting society. Technologies can be mainly pandemic (i.e. globally adopted dominant technologies) or endemic (i.e. emerging in different ways in the various local contexts). With regard to the values that support growth processes, it must be said that these values can, on the one hand, chiefly favor individual subjects (individual persons or companies) whose capacities make them rise above the context and that are able to successfully compete at a global level. On the other hand, they may also prevalently support communities of people (such as institutions or self-organized communities) who share responsibilities and generate the kind of “collective intelligence” that is often behind many cases of innovation. In the first case, the focus is on the best, in the second case on the communities.

The two axes of technology and social principles create four quadrants, which must be considered distinct but equally legitimate scenarios that occur in all three sections (move, live and work) of the path of the exhibition:

- *The governed city: technologies offered by the global market support forms of innovative management for the common good.* In this scenario the city of the future calls for a strong focus on the decision-making process, the enhancement of social networks, timely communication and the need to participate in collective decisions. The task of those who govern the city will be, even more, to define the rules of co-operation, adjust standards to encourage innovation and manage negotiation processes between different social groups. The modern factory is completely different from that of 50 years ago. Sectors such as photonics, bio-robotics and smart materials have led to the progressive and constant replacement of physical products, with services that are increasingly immaterial. The technology is “softer”, clean and not harmful to health. Therefore the factory is back to town, even in residential neighborhoods, in form of mini factories or desktop factories. At one time, the factory had to be located away from the home. Today the opposite is true: cross-contamination between production, research, art and finance is what matters. It's important to encourage informal relationships via the Internet and the physical closeness. A balance has finally been established between working conditions and lifestyle: working space and working hours are eventually inclusive, the massive commuting of workers and the distribution of goods through long distance logistic are no longer required. The smart grid allows residents to optimize energy and water consumption. Depending on the time and the destination, the use of high speed trains, public transportation, electric cars and/or bike sharing services is encouraged by the local municipality.
- *Innovation on a global scale: pandemic technologies for individuals who work at an international level.* The “universal language” of technology and entertainment and the global brands unify the world culture in a whole environment. We face the challenge to make more efficient use of resources, optimize energy consumption and provide timely services when needed. Energy production is therefore without borders. Digital worldwide platforms are used to connect all public utilities such as electricity, gas, water, waste management, mobility, emergencies and security. Huge worldwide platforms for goods and services production and distribution are even more ramified: the operational sales and service activities are conducted through international branches, whilst the R&D&I activities

¹ SPREAD Sustainable Lifestyles is a European research project (2011 -2012) coordinated by the Centre on Sustainable Consumption and Production (CSCP, Germany) which also included the participation of the INDACO Department of the Politecnico di Milano. The project involved different actors (including entrepreneurs, researchers and representatives of civil society) that aimed to develop visions of sustainable lifestyles in view of 2050. (www.sustainable-lifestyles.eu).

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are concentrated in a large research centre in the home country. The long-distance journeys are made through suborbital flights (which can connect Milan and Sidney in 4 hours) and electric, automatic flights link cities in the middle distance. Personal mobility can be solved through hybrid flying vehicles, that can take-off and land vertically just like a helicopter: normally they are battery powered, but during the take-off the extra power of a bio-fuel engine is provided. The quality of life in the city centre has improved a lot, there's less traffic and more public transport, the air is finally breathable. The small local shops can be supplied every day with fresh, zero miles food. The apartment is a super-equipped capsule, which not only saves energy, but can produce it for its own consumption. Its extension is reduced, but the location is central and prestigious. The historical and the technological urban fabric mix and overlap in layered hybrid buildings.

- *The talent of individuals: endemic technologies for individuals (makers, new entrepreneurs and new generation artisans) who work locally.* In order to meet the new demand for more personalized products and services, a new production system is already being created thanks to the availability of technology, the accessibility of common experiences, to the openness to the community and networks of expertise. Youth entrepreneurship initiatives give life to start-ups that appear as a small business or a high-tech craft, located in the basement and ready to meet demands on the other side of the world. Production may even be performed by consumers themselves, the makers, with 3D printers. In these micro-enterprises, the factory is replaced by a simple flat, often the home of the entrepreneur, as it was the case for artisans in the past. The entrepreneur does not require large amounts of capital and risk, but rather creativity and a strategic vision. The manual dexterity allows makers to buy low-cost kit to transform second-hand vehicles into efficient vehicles powered by an electric battery. Bottom-up collaborative services are put in place to share cars and bikes on a peer-to-peer basis.

- *The energy of communities: local technologies for a group of individuals who share community and solidarity values.* In a connected world, small is not small, and local is not local. What is now small and local is also a node of the Internet. Its ability to be relevant, therefore, does not depend on its size, but on the nature and quality of its connections. Hence, the potential feasibility of a new socio-technical distributed system is born, in which the “global” emerges from the connection of a multiplicity of “local systems”, which have a scale and a complexity understandable and controllable by the community residents. To live away from large urban centres is no longer detrimental, and it is possible to match the employment opportunities with the pleasure of slowness. Thanks to technology, to live in the countryside doesn't mean feeling isolated: public transportation, or car pooling and car sharing services reach out to the hinterlands and solutions of integrated subscription make the cost of mobility affordable. Public space dominates. Through the voluntary exchange of expertise and time, it is possible to access many collaborative services without spending money. Social relations are the main form of welfare; people help each other to live a more relaxed life, holding out against the effects of a momentous crisis. Self-construction, co-housing and shared living spaces provide affordable and convenient accommodation, equipped with energy-saving technology and Internet connection.

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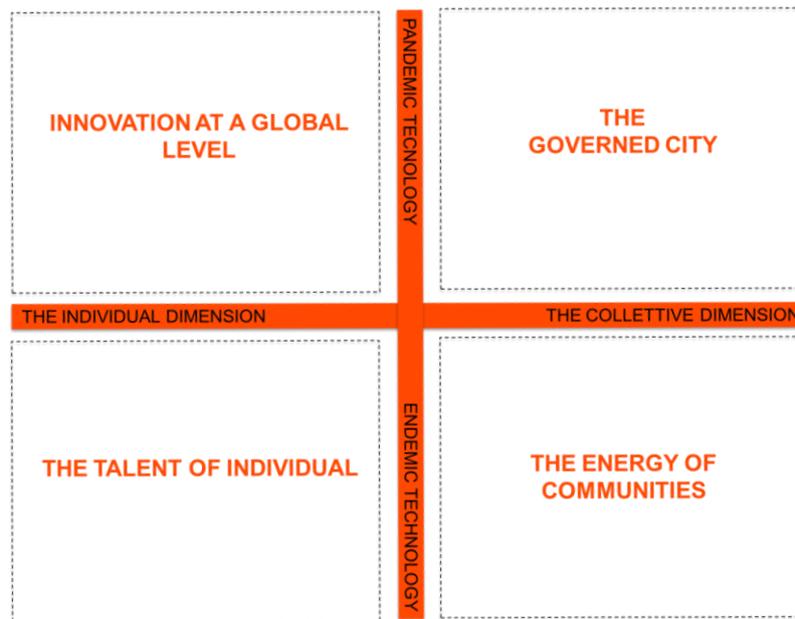


FIGURE 1 The systematization matrix

The brief model outlined here was used to classify suggestions and the current kinds of innovation, to speak about what everyday life in Milan could be like in 2033 and to tidy *memorabilia* related to the recent history of the Politecnico di Milano.

RESULTS

The exhibition unfolds smoothly and without interruption through 12 installations, which develop the four scenarios according to the three main themes of *mobility*, *housing* and *work*, intersected by the transversal ones of *energy*, *materials* and *ICT*. The installations consist in transparent glass totems, “inhabited” by the transparent images of the future citizens of Milan in 2033, featured by students, colleagues and friends of the Politecnico di Milano. When asked, through the visitors’ simple gesture of tapping the glass, they tell us about their journeys and work, their home and what they eat, the children’s education and what it means to grow old... Every narrating voice is synchronized with an animation projected on the floor. A sketch, like that of a pencil on a notepad or chalk on a blackboard, interprets and visualizes each of the 150 stories, which constitute the core of the exhibition. The sketch is surrounded by a dashed bounding box, because in technical drawing you use the dashed line to design something hidden by something else. Similarly the future is not in front of us, but it hides behind the present time/space.

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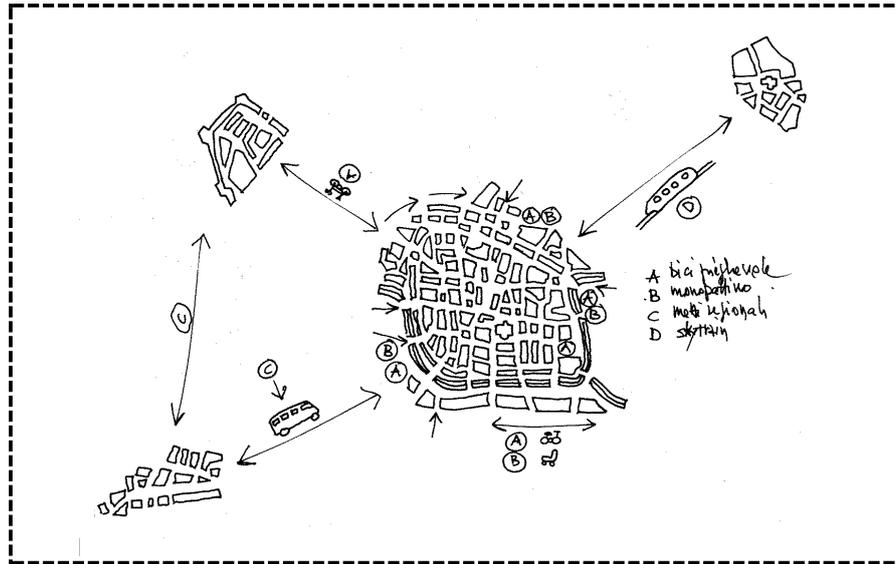


FIGURE 2 The sketches which illustrate the story

The glance on the sequence of totems stimulates the visitor to compose endless montages, combining the images by proximity, causality, analogy. Everyone can cut them differently and no default viewpoint is privileged. The environment is designed as a "project sheet" on which to walk in order to know, without a unique or fixed path. The sketch, as a manual practice, becomes a privileged language: materializing the line in movement, it explains, predicts and illustrates something that has yet to exist, leaving room for any changes during the work in progress. The resulting environment is dialectical and immersive and endowed with unexpected dynamism.

Along the path real objects reveal other stories within the story. The parade of the so called *memorabilia* expresses the historical and mnemonic substrate of the exhibition. These projects, prototypes and products, which have been designed over 150 years by distinguished professors and students of the Politecnico di Milano, have introduced forms of disruptive innovation in the past and still carry the meaning of "future visions in the past". Therefore they function as connectors of visible and invisible dimensions, events and people far away in space and time.

Hanging on the wall of the gallery you will find the so-called *Seeds of the future* collection, which presents projects and case studies, sometimes still in the very early stages of development that may have a significant impact on our future lives. These include examples of important international architectural firms next to photographs of more ordinary - but still rare - products, services or buildings; models being studied and tested in the university's laboratories next to prototypes made by big companies and research centres.

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FIGURE 3 One of the twelve interactive totems with the interview to a Milanese of 2033 about the mobility.

CONCLUSION

The exhibition features 150 stories from everyday life, some advanced and others more traditional, some focusing on the talent of the individual, others more on a collective dimension. The scenarios may come true or they may occur in an opposite way. In 2033 some of the seeds of the future presented will still be in the germination process, others fully developed, while others will disappear without a trace; we will recognize ourselves more in some, and less in others. This is not what matters. It is important to focus on possible futures that encourage us to reflect on ourselves, how we envision ourselves over the next twenty years and which actions should be taken in order to outline what we hope will become a reality.

At this point, one might wonder why we have chosen a timeframe of 20 years and not of 10 or 50 years.

20 years is a period of time short enough to avoid simple science fiction clichés, but extensive enough to catch a glimpse of possible changes - some small, with a limited impact, others more radical - in our days. Innovation occurs at different speeds in various fields, from the accelerated pace of ICT technologies, from energy research and new materials to the slowest fields of infrastructure and construction. We will all be 20 years older: young people will be adults and adults will be elderly, the elderly will be extremely elderly, newborn babies will be 20 years old. If we close our eyes and think about how we will live, instead of a completely different world, we see a changed world, perhaps even profoundly, which is inevitably rooted in the world of our daily experience.

The interesting feature about this near future is that the way change is designed is up to us. We are the ones that, starting from the problems and opportunities of today, have to design the future. In order to design the future we must have a vision of where we want to go and put relevant technical solutions to the test. Like a child that looks to life and approaches the age of 20 with many opportunities and possible futures, each person will have to choose their own. Not starting from scratch, but building on the shoulders of the previous generations that came before them.

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Therefore, understanding where we want to go is the first and decisive step: towards a world that is fairer? More sustainable? With more or less freedom? With more or less individual responsibility? But equally crucial is our ability to build technical solutions that are capable of opening new doors. The two dimensions, values and techniques, are closely intertwined and it would be wise to work on their relationship.

The imaginative language of the exhibition is invented by Studio Azzurro, a framework of artistic research that expresses itself through the languages of new technologies. The group of video artists established in 1982 by Paolo Rosa, Fabio Cirifino and Leonardo Sangiorgi, has been exploring the poetic and expressive possibilities of these means, so crucial to contemporary relationships, through the realization of sensitive and interactive environments, theatrical performances and films, internationally acclaimed, for over 30 years.

On this occasion they wish to arouse curiosity and stimulate confident reflections about our own future, in tune with the design responsibility that the Politecnico di Milano has been spreading from Milan to the rest of the world for 150 years.

Those expecting to see the fiction special effects will be disappointed. The animations are produced through a simple pencil and every 3D hyper-realistic rendering is accurately avoided. The resulting poetic and deliberately abstract images are intended to trigger emotions and thoughts, rather than to disclose complex scientific content or anticipate what our reality will be like in 20 years time starting from now.

These scenarios, which are very different from one another, stress a significant underlying decision not to aim at a single all-embracing future, but on the contrary, to aspire to a multitude of possible, multiple, changing, permeable, combined, high tech and low tech, advanced and traditional futures, in which everybody will be able to freely organize their daily life.

The future development of the project itself is actually under evaluation in the form of a *Seeds of the Future* observatory and a think-tank of the “Made in Polimi” design scenarios.



FIGURE 4 *The Memorabilia parade along the exhibition path.*

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