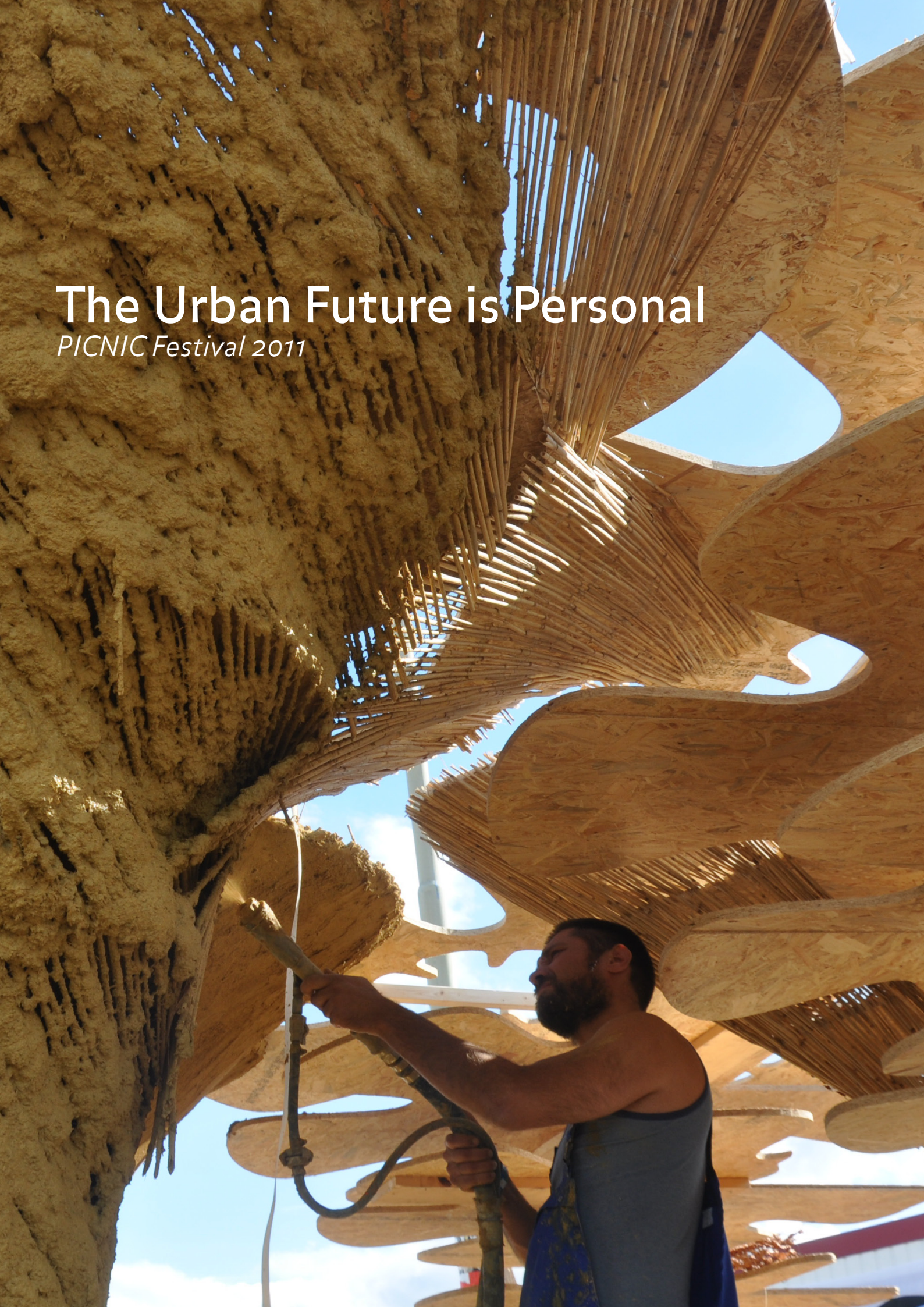
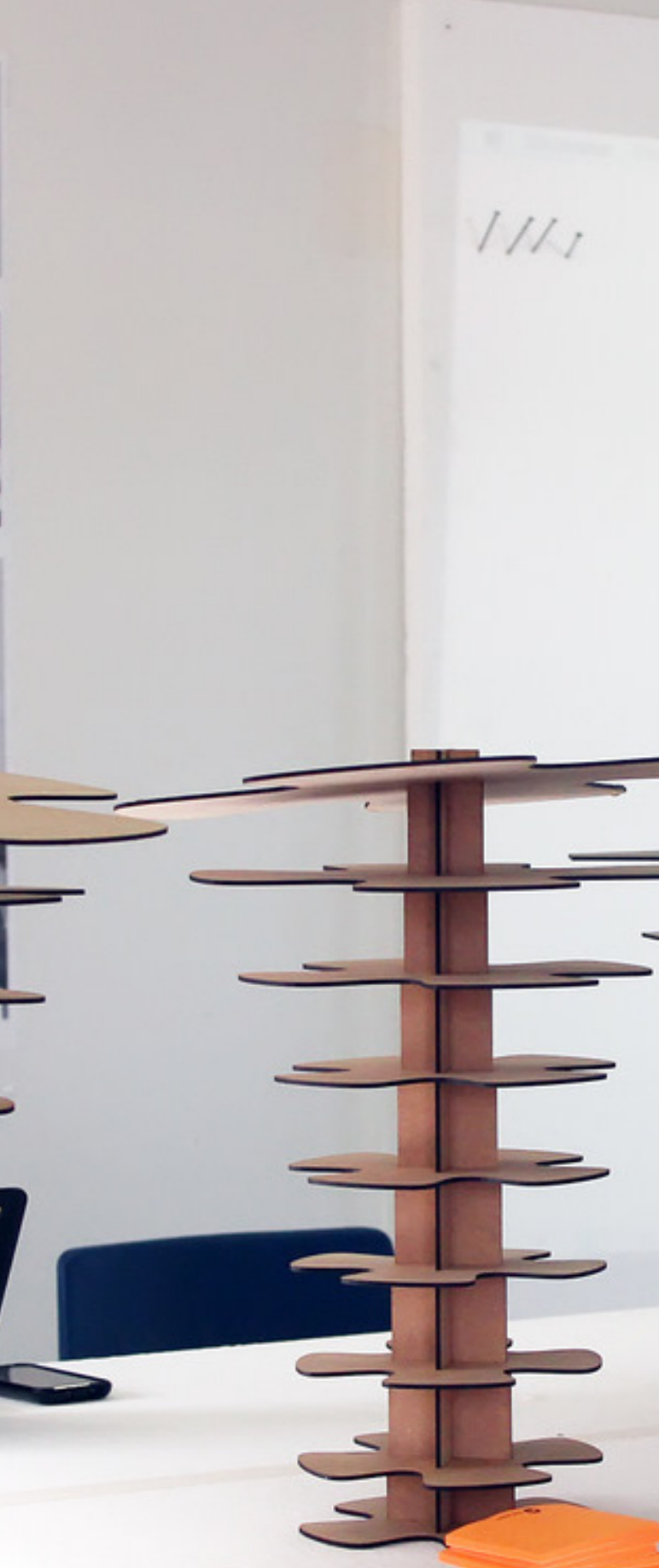
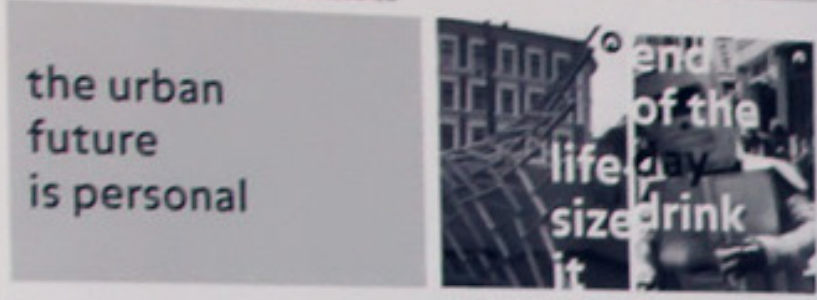


# The Urban Future is Personal

*PICNIC Festival 2011*





# Introduction

Digital production, online platforms for knowledge sharing, information access, exchange systems and social networks radically change the structure of society.

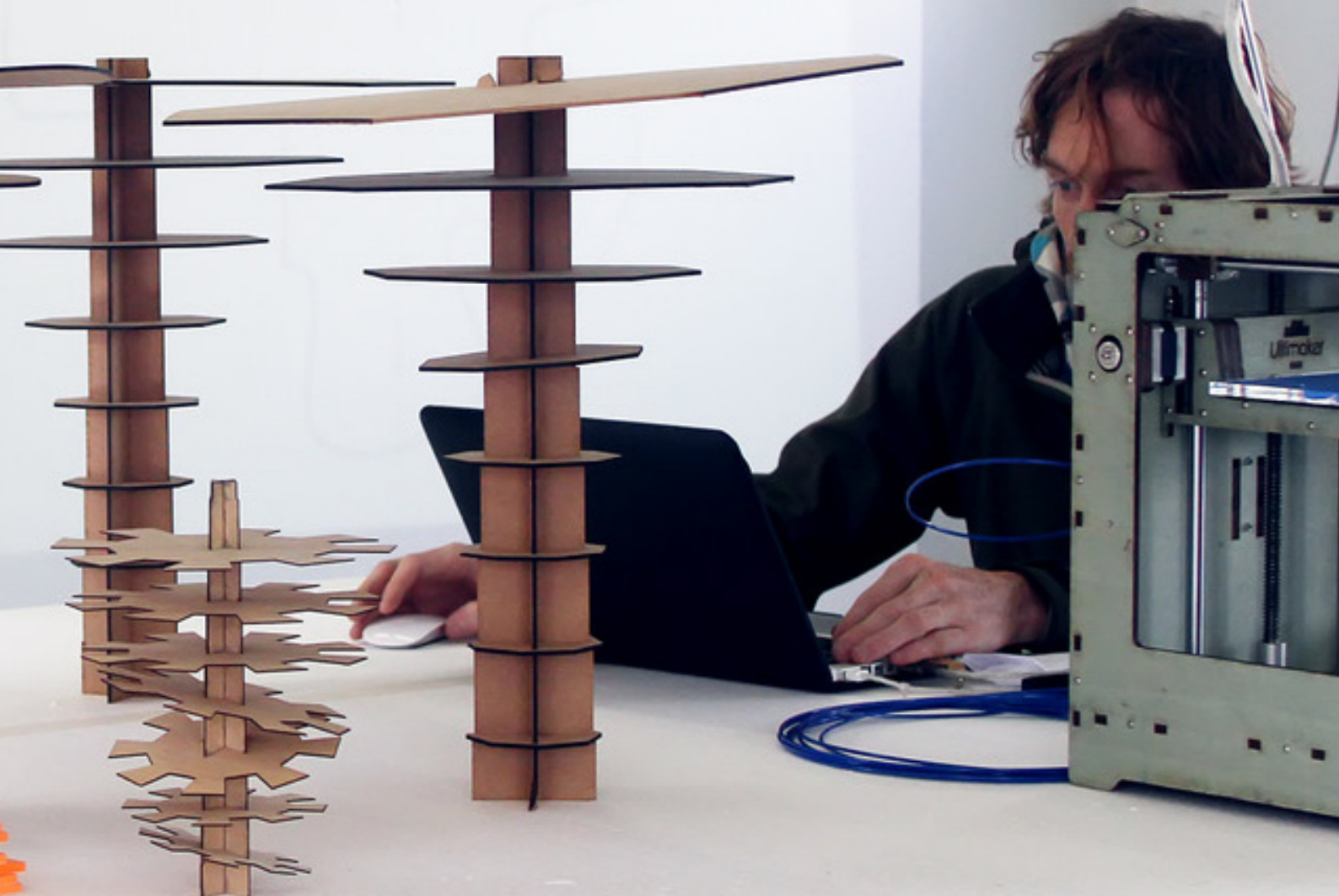
Ever since the Industrial Revolution, we have been building in mass production, a non-transparent, centralized and closed system. But a new industrial model is rising from the principles of the internet; social, open and distributed. This will determine the design and production processes "as we know it". The next industrial revolution is in the making. Distributed local small-scale production driven by the democratization of digital fabrication tools perfectly combines with the digital global communication networks.

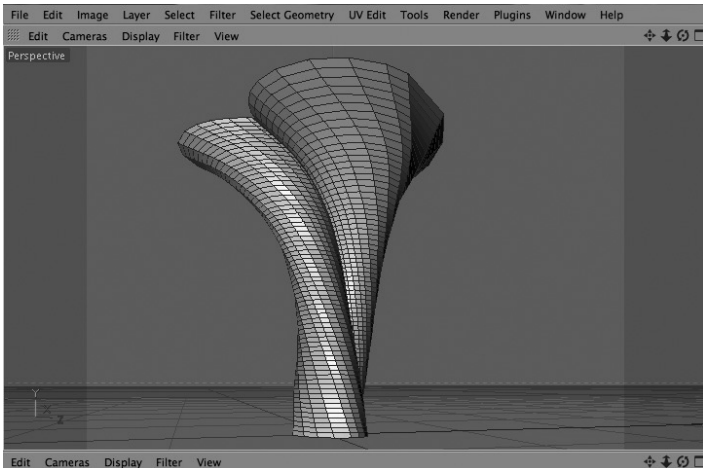
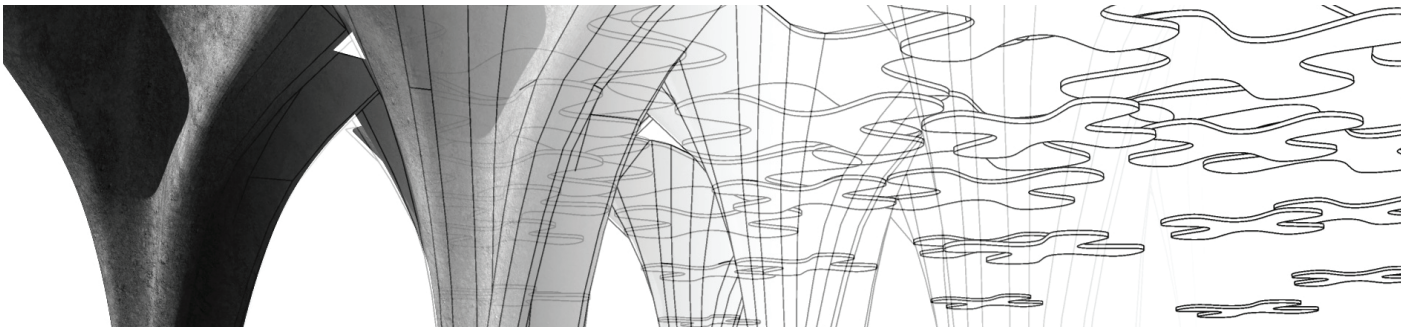
The current economic climate offers great opportunities for this small-scale networked industry. Big industrial construction plans have been stalled. Communities, designers and makers increasingly shape their own urban environment. We can use a computer program to make any design as

complicated or extraordinary as we want. And we have the machines to produce it; think of a 3D printer for example. With digital fabrication, designs can easily be shared, distributed and locally produced in a personalized manner.

This will have a great impact on urban development. It alters the existing interactions between users, architects and builders. The designers and architects get access to new tools and materials. The user will have more opportunities to actively participate in design and production of their physical environment.

In the light of these developments, Waag Society organized a public event during the cross-media festival PICNIC in September 2011: The Urban Future is Personal. It made a connection between the possibilities that digital manufacturing offers architecture as a discipline and the opportunities it provides for users to participate in the design and production.





## Preparing Hypermud structures

A generative structure was made with a parametric design tool. The (open) source files can be downloaded at: [fablab.waag.org/project/hypermud](http://fablab.waag.org/project/hypermud). Second step was to make a scale model with the 3D printer to test the design.

The real thing was then created on a cnc router at Fablab Amsterdam with 18mm plywood and transported to the building site at NDSM Wharf.



The objective of the Urban Future is Personal was twofold:

1. Bringing the possibilities of digital fabrication in architecture to the attention of a wide audience.
2. Encouraging public participation in architectural design through new principles of open architecture: users as designers, open design and co-creation.

During PICNIC, Waag Society explored the promise of digital manufacturing, online platforms for knowledge sharing and collaboration, as well as social networks for the design of public space in urban planning, healthcare and education. This was done during a three-day interactive program, with varied workshops and by working with architects, urban planners and other creative professionals.

We have examined the changing role of designers, manufacturers and end-users. For this, we used Waag Society's expertise with design methods such as 'Users as Designers' and 'co-creation', in which user participation is essential. For Waag Society, Users as Designers is a way of working. In every project we do, we involve end-users in the different stadia. In that way we make sure that our concepts, prototypes or products really benefit the needs of the end-users. The same goes for co-creation, where valuable solutions are created together with end-users and other stakeholders.

#### **About Waag Society**

Waag Society, institute for art, science and technology, develops creative technology for social innovation. The foundation does research, develops concepts, pilots and prototypes, and acts as an intermediate between the arts, science and the media. Six years ago, Waag Society director Marleen Stikker co-founded PICNIC, creating the leading innovation platform in Amsterdam.

#### **About this publication**

In this publication we will elaborate on our findings with regards to The Urban Future is Personal. We will summarize them and will let the participants of the workshop explain what they achieved and experienced. Furthermore, we will formulate our conclusions and look forwards. We will explain our next steps and plans for future exploration of digital fabrication.

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**waag society**

## *Workshop Hypermud*

Digital fabrication in architecture makes it possible to transfer designs made on computer to computer-controlled machinery that creates actual building components. This 'file to factory' process enables architects to realize projects featuring complex or double-curved geometries. Digital fabrication offers not only great new technical possibilities; it also enables new ways of distribution, personalization and sharing. Online communities of creatives and a rising network of backyard industries give new meaning to the phrase "think global, act local". Digital fabrication is crafting in the 21st century way.

By using ecological building-crafts, the team combined global trends with the very local. Bas van Abel (Creative Director at Waag Society) : "This is a 21st century trend as well. Building with materials that you can find in your own backyard is much more sustainable than getting it shipped in from another continent. A popular material in European backyards is mud or clay."

Not surprisingly, the fluidity of ecological building and the flexible design and creation process of modern fabrication have a lot in common: together they bring construction close to home and make it personal again.





*René Dalmeijer*  
(participant, contractor sustainable  
architecture, RDPA)

What is the main advantage of co-creation for you?  
"You are in direct contact with the user, so you can better tune the final product to the needs of the user."

Do you think co-creation will be widely used in future projects?  
"I try as much as possible to apply co-creation in my own practice because it is important to break with old paradigms and take new paths. In my experience building technology is too complex for one person, so I think co-creation is the solution."

Do you see any disadvantages with respect to co-creation in urban planning?  
"It requires much more organization to make co-creation go smoothly. This of course means that the process takes longer than usual. Nevertheless, I think the benefits outweigh the disadvantages. The final product that you will eventually deliver is worth the extra time."

How are you involved in the building process of Hypermud and what do you think of the end-result?  
"In the preliminary phase, we looked at the possibilities and ultimately came to this structure. Because we left some objects uncovered you can still see the evolution of the project. All the phases of the building process are visible."



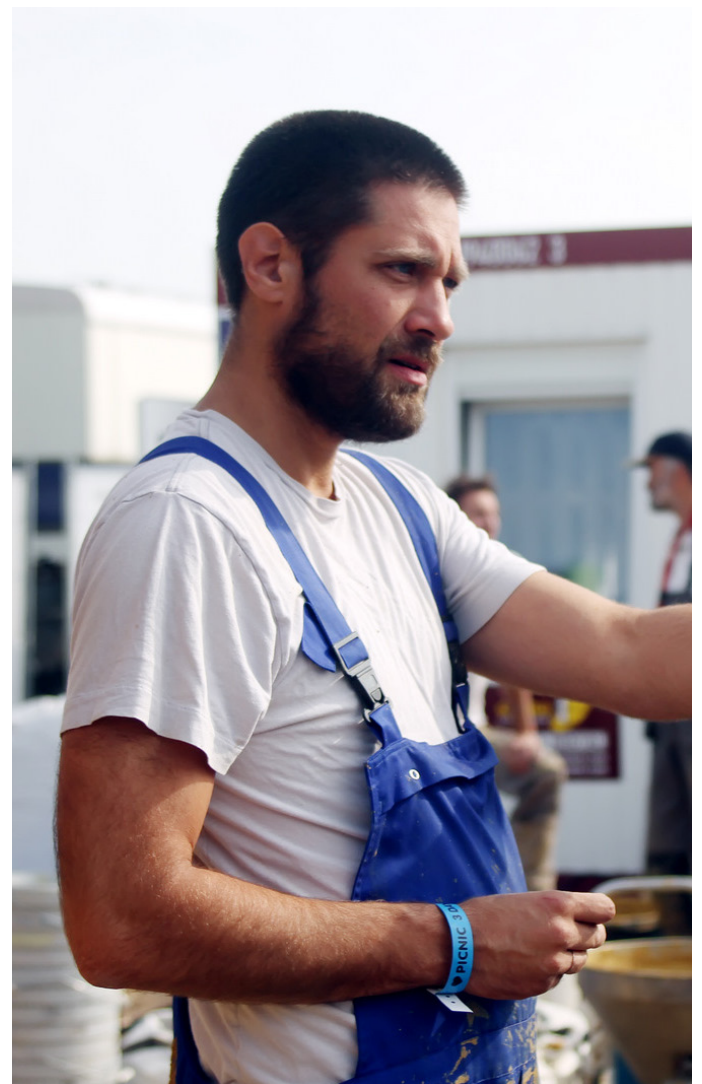
*Arne Hendriks*  
(participant, artist for TU/  
Eindhoven)

What do you think is the added value of co-creation within your field?  
"When you start working together, you reach more than just your own direct environment. You become part of a knowledge network. This way of working also fits the times in which we live. The collaboration represents the relationship you have with each other."

What does the term creation mean to you?  
"Creation is for me the possibility to affect your community and to be a part of it."

How do you apply co-creation yourself?  
"I do my research by asking other people questions. Everything I don't know is at the base of these questions. I think you should dare to ask for help when you are trying to solve something."

You are the co-developer of the Hypermud concept here at PICNIC. Is this building method something you will use more often?  
"Yes, I will definitely use it more often. Besides the fact that it is a very nice way of building, you can totally shape your structure the way you wish. I brought students from the Technological University of Eindhoven so they can experience this way of building too."







*Martine de Wit*  
*(participant, Dus Architects)*

How did you participate in this project?

"The project was about finding out how we can combine digital fabrication and new forms of shaping structures. And we focused on collective building; everybody wants to design. Digital fabrication makes this possible. The nice thing is that if you want to change sometimes you can."

What is the biggest advantage of co-creation?

"You know whom you are building for. We are now developing and transforming parts of the cities with the people who live there. We encourage people to change their own houses and neighbourhoods. Also, the role of architecture is evolving."

What does co-creation mean to you?

"Co-creation has so many levels, but most importantly it helps people to have an impact on creation. For instance by creating small-scale templates in which they can personalize different architectural elements. Hypermud is a good example of this. And it is a nice combination between computer technology (digital fabrication) and building with natural materials."

What is the best description of this project for you?

"Building is democracy."

*Vincent Schipper*  
*(participant, Volume Magazine)*

What do you think of this project after three days of participation?

"We wanted to see what happened if we started building something based on social engagement. The idea was to create urban objects as prototypes that could be implemented in the city. We wanted to see which social elements were important in this project; such as interaction or permanence."

What is the biggest advantage of co-creation in this Hypermud project?

"The first advantage for me would be that it brings people together. Secondly, with digital fabrication, we build and apply by doing. We actually created something real."

What does co-creation mean to you?

"For me, an important element of co-creation is having an open framework. It is important to think about how we can open up this framework, so that people can start feeling ownership over the objects in their environment. And next to this, co-creation helps people develop trust in their social environment; their community."

What do you think is important in this project?

"For me, the user is the most important element in this project: the user is the producer. With this technique, anybody can build his or her own creation. That is why there is such a strong social and bottom-up element to this project. For governments this could be a difficulty. How do you keep control as a government over these kinds of processes? And what is your role in this way of creation? Furthermore, a concrete difficulty for this project is how to apply this way of creating on a broad scale. We need to find out what the economic model behind it is."

What is the best description of the project for you?

"Create it by doing it!"

*Martina Marmugi*  
(participant, user, Industrial  
Design Student of TU/  
Eindhoven)

What do you think of this Hypermud project?  
"I am interested in the way we use the model to develop  
the structure and the ecological material development."

What have you experienced so far from participating in  
the Hypermud-project?  
"It is a good chance to see the physical problem for  
design. The physical problem sometimes is hard to  
imagine in advance when you design it. Therefore, I  
learn from doing it. Also, building something from a user  
perspective is a necessity if you want to be able to let  
structures fit well into the environment."



*Ans van den Bosch*  
(participant, user)

What do you think of this way of working with clay?  
"It is really nice. The combination of today's techniques  
and ancient ways of building is really good to see. It really  
stands out compared to the rest of the PICNIC festival as  
well. At this building site, you use organic shapes in an  
industrial landscape. That's what I found so appealing."

Do you know the concept of co-creation?  
"It did not ring a bell, but this was a good way of getting  
to know more about it."



# Seminar: The Urban Future is Personal

We believe in a future where the importance of DIY culture and participatory design is growing. A future in which users will be increasingly involved in designing their own environment and designing the public space: a future involving open architecture. Digital production, online platforms for knowledge sharing, information access, exchange systems and social networks radically change the structure of society when it comes to urban planning, health care and education.

## **The Urban Future is Personal**

During the session 'The Urban Future is Personal' Bas van Abel introduced a key word that is hard to translate in English: *Maakbaarheid*. This could be translated as 'makeability' or, more precisely, 'the makeable society'. Apparently, this concept is only defined in economical and political terms and does not focus on how a society can be made or improved by a citizen or an entrepreneur. However, communities increasingly shape their own environment.

The following presentations were all based on this subject and focused on urban planning and architecture. Zef Hemel (Urban Planning City of Amsterdam) explained the concept of the Wikicity: an open planning process where the audience is involved and should be activated by storytelling. Tess Broekmans (Urhahn Urban Design) spoke about bottom-up plans to alter the function of public spaces. Mark Dek (Archadia) presented Urban CMS to us: a personal architectural interface. James Burke (VURB) then took over to visualize ways to reuse space by collaborative redevelopment. In the second part, Hans Vermeulen (DUS Architects) showed us several projects of public architecture. Tomas Diez (Fablab Barcelona) and Areti Markopoulou (IAAC Barcelona) presented means to use digital fabrication to create customized devices that capture information. At the end, Christian Friedrich and Tomasz Jaskiewicz spoke about their research group at TU Delft, Hyperbody, which explores techniques and methods for designing and building non-standard, virtual and interactive architectural structures.

## *Christian Friedrich* (speaker, Architecture researcher of Hyperbody/ AADH)

What is the biggest advantage of co-creation?  
"Immediacy and interaction. This is a new quality: we apply a digital environment in the physical space, so that you can connect with other people. Now you can create a physical and material artefact that makes people interact."

What does co-creation mean to you?  
"It brings all kinds of people from different disciplines together, not only architects. People are developing something for their actual needs, the moment that they need it."

Do you think that co-creation is going to be a constant factor in future building projects?  
"Yes, because the building process never ends. With co-creation, instead of the traditional 'form makes function' we focus on the opposite 'function makes form'."

What do you think of the Hypermud project?  
"It is nice to learn about other people and what they are doing. Having an idea for something and realizing it with others. If you go through all these phases together, than the actual building becomes a part of yourself."



## *Tess Broekmans* (speaker, Urhahn Urban Design)

What do you think of this Hypermud building?  
"It's a piece of art."

What is the biggest advantage of co-creation?  
"People can collaborate, developing their city and building their own environment. From a social aspect, people meet up and they get to know each other better. From a spatial aspect, people care more about their environment; the place where they live. We used to think more about the main structure than people themselves. Now this is changing. It's much more important to find out what people are looking for in the city. We work together with people who really live there, and they give so much input. They know the area better than we do. So their input helps us in understanding how the area works to find fitting solutions."

What does co-creation mean to you?  
"To me it means finding the right balance between what needs to be planned and what can grow more organically from people. And it means finding out what they need from the area."

What is the best description of co-creation for you?  
"Co-creation enriches the city."





*Zef Hemel*  
(speaker, deputy director of the  
Urban Planning Department of  
the City of Amsterdam)

What is the biggest advantage of co-creation for you?  
"It makes developments go faster and provides us with results of a better quality, that are hopefully also sustainable. Everybody is fully involved, which helps us in being more responsible for the environment."

What does co-creation mean to you?  
"It is an important step towards the future: this how it is going to be. All the distinctions are fading. That is why I say: Stop playing an expert role, start to be an amateur."



*Tomas Diez*  
(speaker, urbanist, project  
manager Fablab Barcelona)

What is the biggest advantage of co-creation?  
"The peer to peer relationship helps with the creation process. The citizens are the veins of the city, the producers of goods, information and food. Physical space is changing slowly. But if we let citizens play an active role, important issues can be tackled faster and easier."

*Areti Markopoulou*  
(speaker, architect, IAAC)

What do you think is the biggest advantage of co-creation?  
"When you are co-creating there are less borders. The users design for their own needs and the experts take that information into account. Everything that is created is a mix of both parties."

What does the term creation mean to you?  
"For me creation is mainly mental, not physical. The mental part of creation always comes first, sometimes even unconsciously."

In your presentation you have mentioned the solar house, of which construction plans are downloadable. At what sites is the solar house built by now?  
"It has not been built anywhere else yet, besides from Madrid, but the plans are all there. We have created four different models. They range from 30 m<sup>2</sup> to 90 m<sup>2</sup> and are downloadable at [fablabhouse.com](http://fablabhouse.com)."



## Mark Dek (architect, speaker)

What is the main advantage of co-creation?

"The feeling that you create something that is useful for yourself makes you really think about it. So when users start creating, they have a shared value, which helps in adapting the final product to the users' wishes. I believe that the current method of project development, where everything is controlled from above, will disappear anyway."

Do you think co-creation will be widely used in future projects?

"I expect a bright future for co-creation. It is now used on a small scale and the question is whether it will really become something big. The biggest problem is that the person or organization that is responsible in the end must be prepared to share control of the release."

Do you see any disadvantages with respect to co-creation in urban planning?

"The disadvantage is that the participants are not experts. So there is a possibility that they provide content that is not always of high quality. And another consequence is that the process takes longer."

Do you think the business model will change when co-creation becomes a serious factor in the construction process?

"I think the usual business model has already changed, both by the crisis and the lack of space in general. Co-creation is one of the few methods that fit into this era."





## Results Hypermud workshop

The most important finding of the Hypermud workshop is that with digital fabrication, the entire process (from concept, design, technical implementation to realisation/building) becomes shorter and iterative. While working on the construction, we learned certain things that we could implement in the creative or technical process straight away.

This was possible because the design tools (computers) and production tools (cnc router and clay) were available at the building site. We did not have to depend on long delivery times or distribution routes.

Furthermore, the traditional clay-builders that joined us in the project got new insights about the ability to create more complex forms and structures with clay. The technical aesthetics of digital fabrication changed completely due to the natural feeling of the clay. And building with clay in the way we did, turned out to have a strong social element.

Passersby could easily join in, creating interaction between professionals and the audience. As a result of the transparent nature of the entire process, the public could get to know new forms of design and production at their convenience.



## Spin-off

After our workshop during the PICNIC Festival, the Hypermud structure got a new function: it became the setting for the 'Story Telling Festival'.

The NDSM Wharf participated in the Storytelling festival that took place from the 4th to the 6th of November 2011, at several locations in Amsterdam. On the first night there was a Storytelling jam session at the remains of the Hypermud

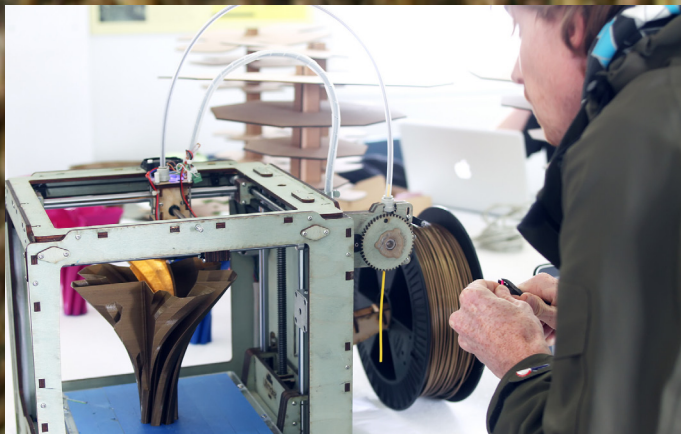
structure. The stories evolved around objects from the former wharf that were found in the houses of the employees at that time. From the dreams of a project developer who envisions a hotel at NDSM to the stories around the Hypermud structure itself: from the initial idea to its ritual disassembly. A unique code was attached to the object, which connected the image of the object with the stories told around it; these stories are now kept in a database.



Photographs on this page: Maarten Jüngen (NDSM Wharf)









## The future

The Hypermud building experiment allowed us to explore current and future possibilities of new digital forms of fabrication. We have looked at ways to combine these new forms with traditional building techniques. And we have brought together amateurs, professionals and students from different disciplines in a collaborative creative process. But most importantly we have experimented with a new production model, in which we do not depend on the standards and supply chain restrictions of the current mass production model. We created an 'on site' production line, from the raw materials to the design and the actual creation of the building components.

The seminar 'The Urban Future is Personal' had a more strategic goal. By bringing together stakeholders with different perspectives ranging from the policy maker (Zef Hemel) to the hands-on urban architect (DUS Architects), we created a context for discussions and follow-up on the subject of 'Zelfbouw' (DIY building).

In 2012 we will focus on connecting the discussion to the Hypermud experiments in a case study within urban development. We will do so in collaboration with 'The Beach', a social design company operating in several areas of Amsterdam, such as Nieuw West. DUS architects

will also be involved in the project. We have proposed a plan for a community 'CraftsHouse', which will be built by the Nieuw West society together with designers, architects and technicians. In the building process we will bring together the (latent) crafting skills of the cultural groups from Nieuw West with other disciplines. The CraftsHouse will be the ultimate combination of DIY methods, community driven aspects and innovation of the production process.

To further explore the innovative aspects of this new production method we have set-up collaboration with the TU Delft Hyperbody team and the Archis platform/ Volume magazine. The collaboration arises from a need for an actual interdisciplinary testing ground for research and will focus on the following subjects: explore the design, fabrication and iterative building loop, combine 'ancient' craft with 21st century technologies for new insights and material and construction research.

The following experiments on location are planned for 2012:

DEAF 2012 (Dutch Electronic Art Festival)  
PICNIC 2012

## Waag Society building crew at PICNIC



Bas van Abel  
Creative Director



Alex Schaub  
Fablab Manager



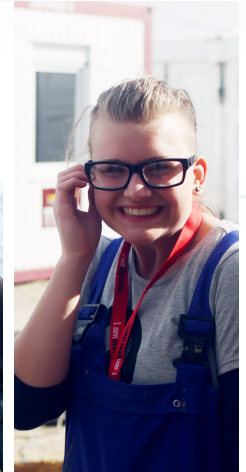
Laurens Schuurkamp  
Developer



Nienke Hoekstra  
Producer

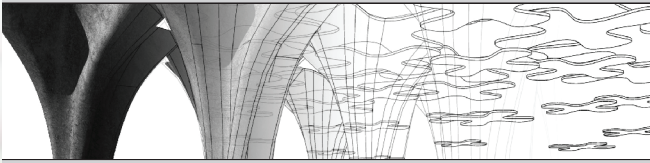


Remko Siemerink  
Developer



Philemonne Jaasma  
Intern

### Waag Society Construction Site



discussing the Urban Future &  
hypercrafting the modern landscape

here builds: **Waag Society**  
on: **The Urban Future is Personal**  
made possible by: **SNS REAAL Fund**

ready: **14, 15, 16 September**  
with: **Dus Architecten and Arne Hendriks**  
execution: **TU Delft Hyperbody, Gemeente Amsterdam DRO/PMB, IAAC, VURB, Archadia, Urhahn, Tierrafino, Euroleem, Strobouw Nederland**

The Urban Future is Personal was made possible by SNS REAAL Fund

**SNS REAAL FONDS**

