taming_the horror vacui

issue #4
laminar experience

EDITORIAL

Taming the Horror Vacui is not an exhibition of works by Haseeb Ahmed at Rib. Since 2018, Rib has been considering a durational, evolutionary format deconstructing the practice of an artist and initiating a dialogue with local conditions; a generative model instead of a representational one. The artist's interventions in the architecture of the art space pile up gradually. However, the freshly inaugurated wind tunnel for *Taming the Horror Vacui* functions as a solid core around which the program unfolds. It is an important milestone.

The fourth event in Ahmed's *Taming the Horror Vacui* program featured the arrival of the wind tunnel at Rib. It was accompanied by a lecture and workshop by Prof. Olivier Chazot, head of the Aeronautics and Aerospace Department at the von Karman Institute for Fluid Dynamics near Brussels. Prof. Chazot also advised the artist and engineers on the design of the wind tunnel for Rib.

Wind tunnels are tools used to test a scientific thesis. One might ask what a wind tunnel is testing once it is put in an art context. Karl Popper talked about falsifiability as a necessary condition for a statement to be scientific: theses can be proven false given certain evidence. What kind of beliefs and thesis are tested in the wind tunnel at Rib? Are they scientific even if not falsifiable? Are they artistic even if falsifiable? What kind of evidence is sought in the laminar air flow of the tunnel when it is part of an art program?

This publication flanks these questions. It puts forward the idea that answers could be found by using a more phenomenological approach, understood as a specific focus on the lived experiences of those involved in the project. Laminar is a term from physics used to describe a controlled flow of straight moving air. Here we have called laminar the experience with the wind tunnel at Rib too, metaphorically referring to the way an artistic or scientific context can change the very phenomena of our sensual and intellectual perceptions. Theoretical questions are addressed through first-person contributions, testimonies of the very idea of using a wind tunnel in an art space for a long-term artistic program.

With this focus in mind, we have included an interview with Prof. Olivier Chazot about issues in the philosophy of science and art linked to his lecture at Rib from last September. We have featured the testimony of two local participants in his workshop, Erica Baltimore and Georgia Delgado-Fitzgerald, hearing their take on the experience of using a wind tunnel for the first time. We have asked artist Caitlin Berrigan to contribute with a poem-a text written as an annotation to one of Ahmed's artworks about the wind tunnel. We have also included an interview with Dr Benoît Bottin, one of the engineers who helped Ahmed with the design of the machine at Rib. We have featured the testimony of Marloes de Vries, head of the educational program at Rib, about the ways her nine-year-old students approached Rib and Ahmed's installation as a scientific facility.

Rotterdam, October 2020

Cover image: detail of Ahmed's wind tunnel at Rib with hand.

AN INTERVIEW WITH OLIVIER CHAZOT

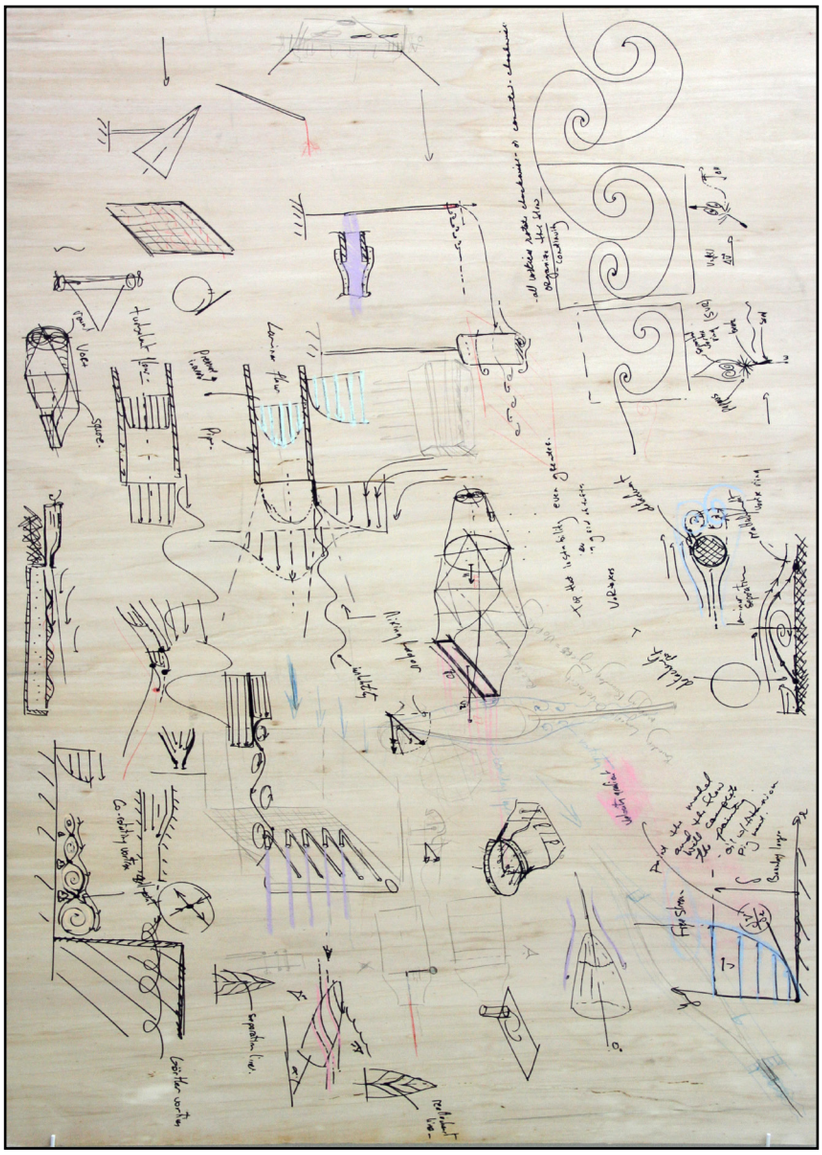
The Horror Vacui is an outdated scientific theory from Aristotle. What is your opinion on outdated theories? Can they still be relevant, like they are in Ahmed's program at Rib?
Old scientific theories are not trash as we could believe. Early scientists were just as clever as us. Today we are more advanced only on a technical level. The difference exists in the kind of questions we ask ourselves today as compared to the past. Aristotle for example was asking what is nature and how we can understand it as something organic. Considering nature in itself is a difficult philosophical challenge, it is somewhat of a mystery where one needs to consider many things, not only what is observable. It is not only about asking "what happened mechanically" after you threw a stone in the water and you saw the water moving. It is also about asking what is water and what is the stone.

What the early philosophers raised as questions is still valid according to me. These questions are much deeper than the questions we ask today in science. This is why there is little progress in finding answers to them. They carried a load that was too heavy. In today's science we restrict the field. Newton for example was not asking what nature is, what matter is, etc. He was asking how we could correlate a cause with an effect, establishing something between two events that took place. Take quantum physics for example, where the questions have been enlarged again. In that field, concepts like "finality" put forward by Aristotle are again relevant. Progress can happen here because we simplify the problem. However, by doing so we leave something behind.

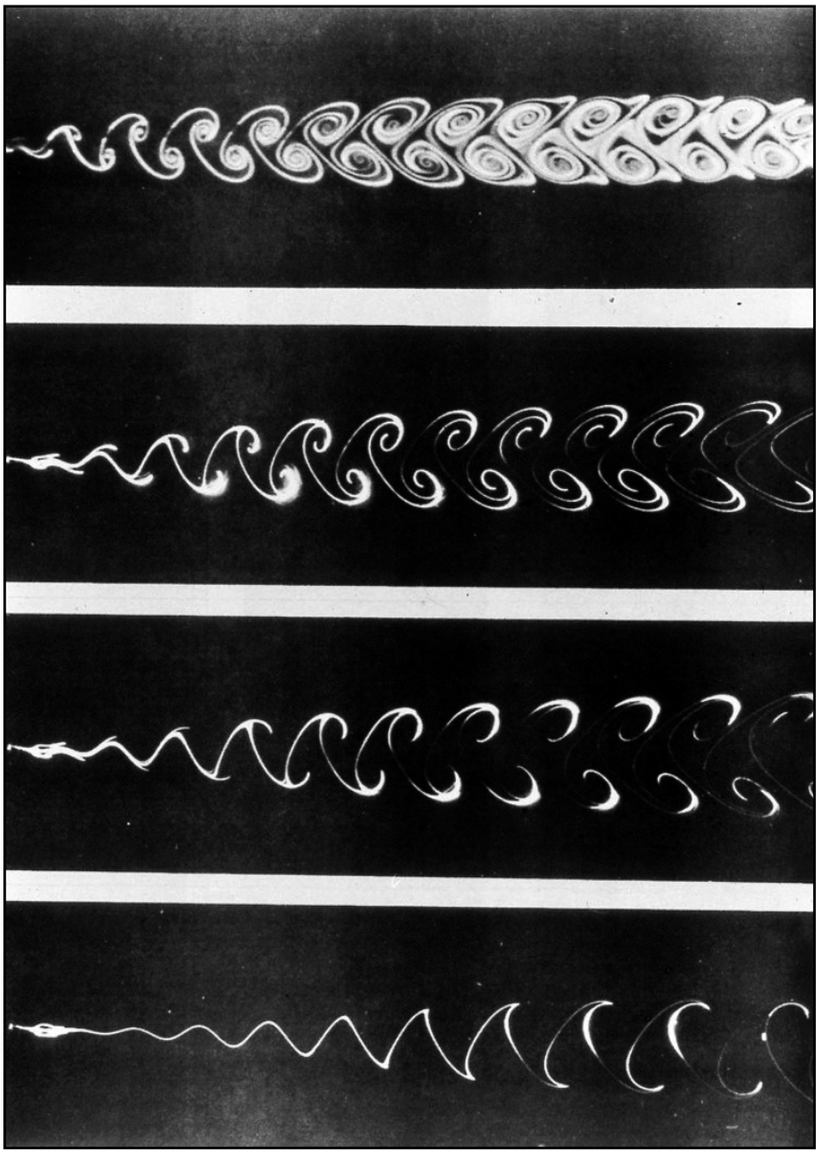
Science as we see it today is about becoming specialized. In the old days, artists, scientists and philosophers were the same people. Today, an artist like Haseeb, by taking again this old theory, is actually continuing it. If today the only true voice is considered science and the rest like art is not placed at the same level, we are overlooking the fact that art is addressing the questions that are left behind by science. Art complements science by giving full perspectives on the world, considering it in its complexity, whereas science takes only one perspective.

Moreover, science has the tendency to address questions that have answers. Today as a scientist you might not know the answer but you know that an answer could exist, therefore you ask that question. For art, there is a consideration to problems that are questions in essence, yet these are pressing problems, they attract and move people.

In your lecture at Rib you mentioned how nature can be seen as a solution to the problems we come up with. Could you please elaborate? Do you see art as more of a critical activity, used to problematize and raise questions, or more of a solution to our political or existential issues?
Imagine I have to explain something I experience everyday, things like the emotions caused by a certain musical piece. These phenomena raise the question of how it can be that something physical like sound waves in the air can also cause cultural, sentimental, and spiritual phenomena. This is a question that is very complex to answer for scientists: they can tell you how sound waves work, how they propagate in the air, how they hit your ear, etc. Yet this doesn't say much about the emotional causes of sound. Scientists have little to say about



The table top at Rib with drawings and scribbles by Haseeb Ahmed and Olivier Chazot. The artist and scientist worked collaboratively on the wooden board after the installation of the wind tunnel in the art space in September 2020. Many of the drawings represent aerodynamics phenomena and ways to reproduce them in testing devices. Models from previous artworks by Ahmed are also present, for example the bullet-shaped test object used in his 2015 exhibition *A is for Albatross* at Museum Bärengasse in Zurich.



The Von Karman street double vortex realized at VKI in a water tunnel. The collaboration and conversation between Ahmed and Prof. Chazot begun more than 7 years ago when the artist was invited to experiment with wind tunnels at the Von Karman Institute for his PhD in practice-based art.

deeply philosophical questions like this one. Now, I suppose that an artwork could offer some solutions to these problems. Art is trying to address what is happening in the world just as much as science, but the questions are different and an artwork might be the answer to them. It is about understanding. For example, when I go to a concert hall to listen to music, I sometimes realize that a musician, through his or her performance, is *making a part of the world more solid*—something you can stand on. To me this is as relevant as demonstrating a scientific problem.

Art can also raise questions, for example through institutional critique. In this way, art becomes both a solution and a problem in itself, or at least the tool to raise a problem.
Art has this power to be critical, but what does "critical" mean exactly? For me it refers to renewing from the inside. Renewal is not exclusive to art though. Science can renew too, but not precisely from the inside. Science tend to be a close system. New paradigms in science come from outside, for example from experiments themselves. An experiment comes to you as an experience, and it can create a change in your understanding of nature and ultimately in your scientific theory.

As a testing facility, a wind tunnel is an apparatus used to test a hypothesis. Do you think the wind tunnel at Rib was used to test a specific hypothesis during your workshop? If so, which one? If not, did it have an educational purpose?
The wind tunnel at Rib is for sure educational, but this is not the point. It contains all you need for it to be a wind tunnel. What you expect from a wind tunnel is always to learn something, so in this sense every wind tunnel is an educational tool. The steps we took at Rib during the workshop were exactly the ones you would take for any test: choosing the model, putting it inside the wind tunnel, start the experiment, check the streamlines, etc. You could really operate the machine. Participants were faced with everything for them to live a scientific experiment, to go beyond a mere aesthetic experience based on the actual presence of yourself with the tunnel. What we did was to put models and yarn on a stick to see how the wind was moving, materialising the streamlines. In this sense we organize in ourselves something from nature exactly the same way we do as scientists.

In the etymology of experiment you have the root "ex" (out of) and the subsequent "per" which has Indo-European origin and refers to risk and danger. Experimenting is extracting something from a hazardous situation by involving yourself in risk for the sake of learning something. It is an instability that helps you to get more stability. As I was saying earlier, art can be the answer after you expose yourself to difficult questions. Walter Benjamin would say that what we do is *not* trying to exploit something but to give birth to something. Experiments are not only functional tools. They are experiences too. They are also processes that birth something in the person who attends to them. Art does the same. What is born could be a poem, a new understanding or an aesthetic vision.

OUT OF SEASON
by Caitlin Berrigan

Out of season, they took the Q to Coney Island because the wants were hot dog and the wants were beach.

A drained and dirty sky leaves all the work of joy to painted signs and suspended amusement rides. The colors hurt when time has gotten to them.

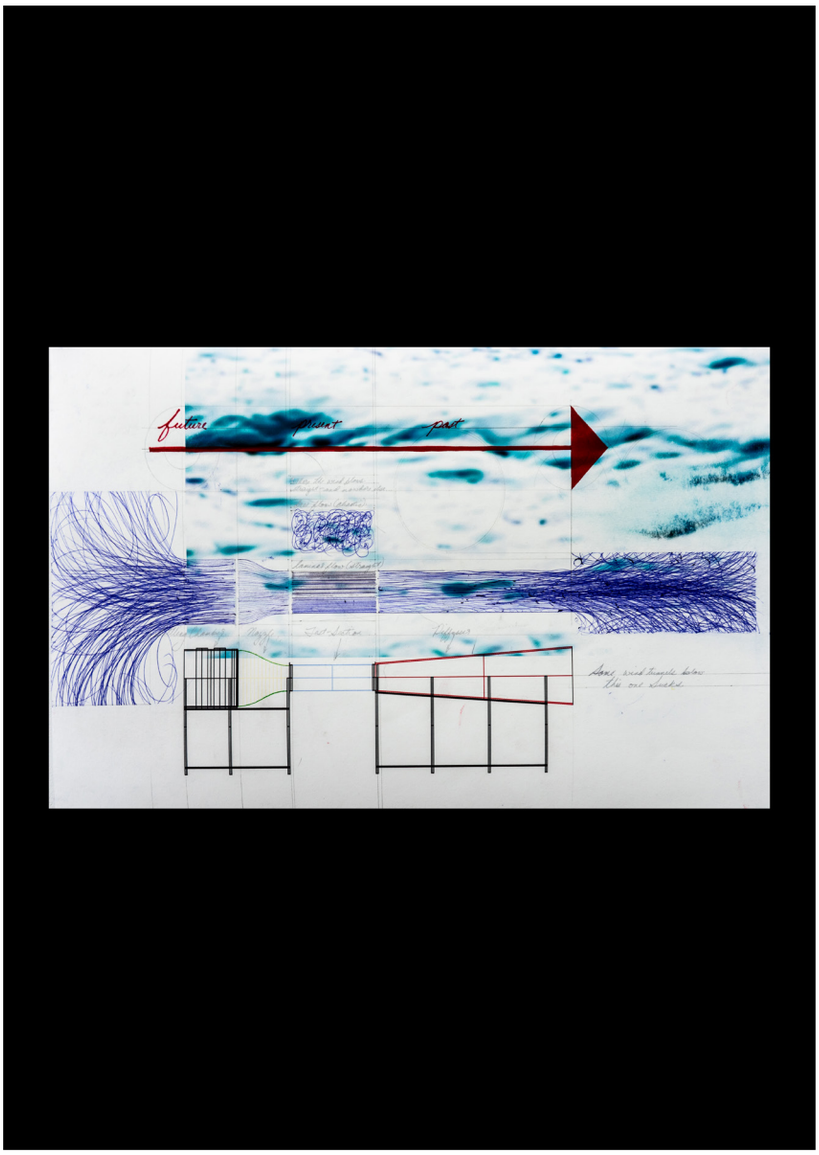
If they couldn't see wind working around them, it was visible in the prickled waves of the mercury ocean. The air was too cold to carry its moisture or its salt.

What was weightless: the disobedient excess of desire.

Articulated states of mourning come in the forms of: sand (disintegration); cavern (evacuation); rot (metabolism); void (phantasm). Call it shape-shifting or call it sublimation, it is a way for immeasurable loss to elude detection.

If it is a question of real probability versus given what has been observed, the prediction is that there was (yes) a model of the universe that contained them both at once. The evidence, however, cannot be replicated.

Longing has no future; it thrives on impossibility. She executed as planned.



Haseeb Ahmed, *Time Flowing through a Wind Tunnel*, mixed technique on paper, 2020.

We asked artist Caitlin Berrigan to annotate Ahmed's artwork *Time Flowing through a Wind Tunnel*, a drawing dealing with the very design of the wind tunnel installed at Rib for *Taming the Horror Vacui*. Berrigan responded with a poem titled *Out of Season*, which we report here in its entirety.

Haseeb Ahmed’s wind tunnel at Rib in October 2020, including the circular inscription "Ruach not Rauch" on the mezzanine frieze. Ruach is the ancient Hebrew word for the breath of God. In Genesis the universe is inaugurated through this divine breath, linking breath and wind with creation. Rauch is the modern German word for smoke created through burning. In much of his work, Ahmed links technical apparatuses like a wind tunnel with the mythologies of the concepts involved in those apparatuses.

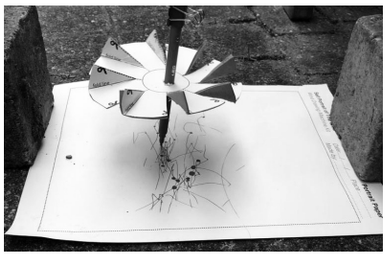
When you are four, everything is an experiment.
Marloes de Vries

Marloes de Vries is in charge of the educational program at Rib, which interacts with Ahmed’s *Taming the Horror Vacui* program and growing installation. She brings children of different ages to the art space where they can play with the topic of wind and more generally with the interaction between art and science. The group of ten-year-old kids is from the OBS Charlois school. Their program runs for 12 weeks with weekly visits to Rib (Covid permitting), a regular schedule that allows deeper engagement with Ahmed’s work and the topics at hand.

She told us that these children’s experience of the wind tunnel was brief and controlled for security reasons but they later recalled the machine with enthusiasm. She confirmed that concepts such as experiment and science are grasped as early as fou-year-old, where everything must be learned by trial and error. In this regard, the wind tunnel was a possible tool to operate with an early scientific and artistic attitude.

The educational program in the context of *Taming the Horror Vacui* involved teaching about the natural phenomenon of the wind, crafting wind sensors, and experiencing scientific facilities such as the wind tunnel.

Images from the workshops organized by Marloes de Vries in the context of *Taming the Horror Vacui* at Rib.



AN INTERVIEW WITH BENOÎT BOTTIN

Dr. Benoît Bottin, an egineer and head of the Mechanical Dept. at ISIB Brussels Industrial Engineering School, designed the wind tunnel for Taming the Horror Vacui. He collaborated with Prof. Chazot and his students Maxime Hendrick and Nassim Giblet.

What are the first things you need to know before starting to design a wind tunnel?
It is important to know the purpose of a wind tunnel as much as possible. You can build wind tunnels relatively easily, with only a few big variations from a standard design. However, there are many small changes you can do to fit the wind tunnel to the needs of the final user. It is actually the most important thing to know before you start.

Can you give an example?
In this particular case, what was important was the flow visualization, which implies very low velocity. On the other hand, it was necessary that people could play with the wind, groups of children for instance. This meant it had to work also on higher velocity.

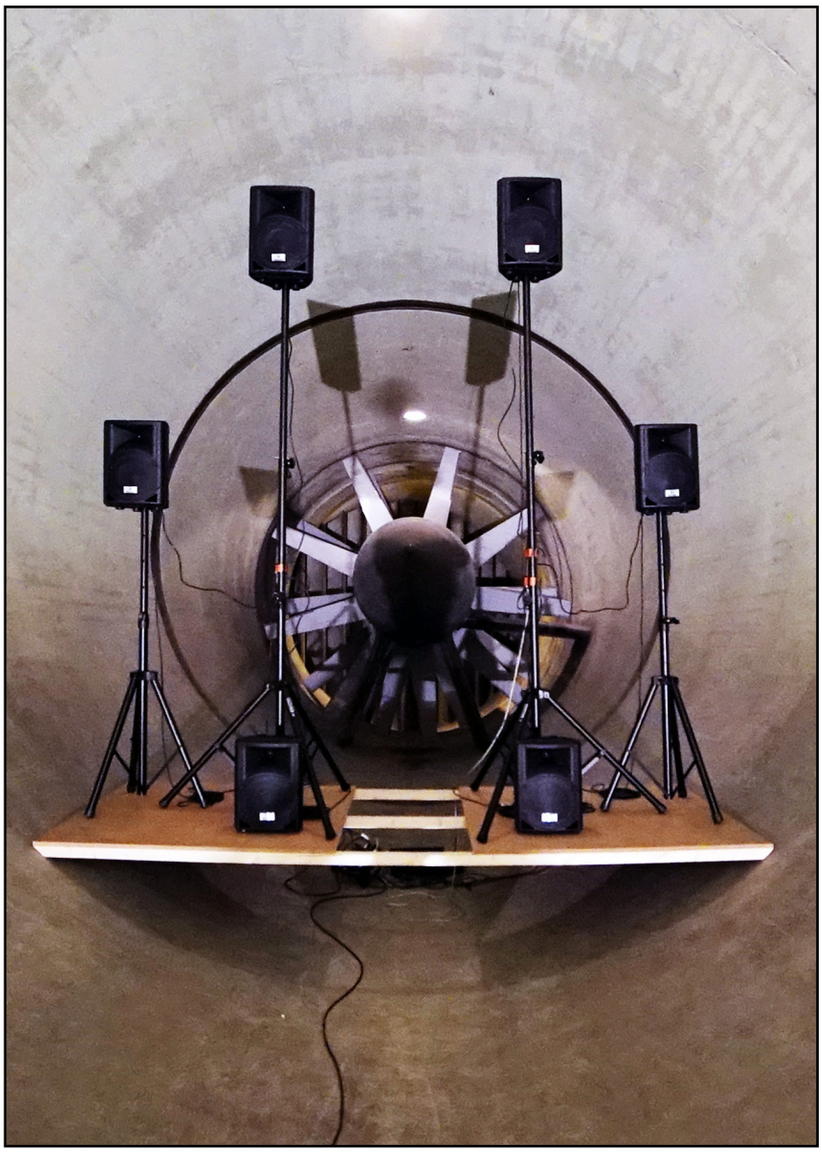
How did you decide about the size of Ahmed and Rib's wind tunnel?
It was a question of architecture; the size of the gallery space itself. The wind tunnel had to pass through the door, which for us was a huge constraint. The test section had to be therefore limited to approx. 50 by 50 cm, which had implications on the size of the larger contraction section. However, it is not just a matter of size. Costs play a role too. A bigger wind tunnel requires a bigger fan, which is more expensive.

What was the reason to design this wind tunnel with steel and wood?
The contraction section has a complex shape, which can be cost effectively achieved with steel. Bending a flat sheet of steel is the only practical solution. Wood can easily be used for flat parts of the wind tunnel. At the same time, using steel and wood doesn't impact the aerodynamics of the machine, insofar as any smooth material works to contain the flow. These were also choices based on the purpose of this wind tunnel, which is recreational and demonstrative. For bigger projects, tunnels that need to test airplanes for example, choices will be different.

Ahmed and Rib's wind tunnel is a sucking-type wind tunnel, which means it pulls the air instead of pushing it through. Why was this type preferred?
Sucking wind tunnels are the most effective ones for this kind of projects, considering budget, purpose, the low velocity required and architectural constraints. The most power-effective wind tunnels are so-called closed return, which means they are a closed loop. However, they are more complicated to build and costlier.

Drawing of Ahmed's wind tunnel for Rib by the fabricator Studio Roalt Zuidervaart, August 2020.

Have you ever designed a similar wind tunnel elsewhere?
I was involved in a relatively similar design for the Royal Military Academy near Brussels, for which the Von Karman Institute for Fluid Dynamics (VKI) designed a wind tunnel of the same type, also sucking, with a similar (although much bigger) test section and with higher velocity. Wind tunnels built for



Haseeb Ahmed's *Acoustic Vortex* installated for the exhibition/performance the *Wind Egg* at the Von Karman Institute for Fluid Dynamics near Brussels in 2015. The set of six speakers created an air flow by playing sound according to a specific sequence. This artwork is a further example of engineering applied to Ahmed's artwork.

educational purpose like this all have similar layouts, a basic and standard design that goes back to the time of the Wright Brothers. They are used to learn about things like wings and aerofoils, testing them in the tunnel. For Ahmed and Rib's wind tunnel, the main inspiration was the L7 wind tunnel of the VKI. It has similar dimensions but it is a blowing type tunnel, mainly used for student training.

Are wind tunnels of this type used only for educational purposes?
Mostly, because they are too small for accurate aerodynamic studies. You can of course get data from small wind tunnels, along with being able to make flow visualizations, but these data are too far from real life conditions. It also has to do with scale effects, which make it impossible to use small models and get accurate aerodynamic data. You see, what is important is the ratio of the various forces at play in an aerodynamic phenomenon, which needs to be as close as possible to reality. It is not only a matter of size or speed, but the combination of all the parameters at once, which needs to approximate nature as much as possible. For example, NACA (a precursor of NASA) built a tunnel in the 1930s in which you could increase pressure, which artificially increased density and compensated for the smaller size of the model compared to the real object.

Was the artistic purpose of Ahmed and Rib's wind tunnel seen as a difficulty in the process of designing it?
I knew the purpose of this machine was not so much scientific as it was visual. It was interesting to work on it for an artist as it offered a different perspective, a point of view far from what I am normally used to. This was the first time for me I designed something for an art space. It was like designing a wind tunnel that would not be used scientifically.

At first, I wanted to put my hand in the wind tunnel, because I live in Rotterdam and I am always surrounded by wind tunnels made by our makeshift metropolis, this city that brings the heavens back down to earth. I wanted to feel the difference of Rotterdam cities wind tunnels and this wind tunnel, to feel how it corresponds to real life on some aspects and not other aspects.

But I put my hair in because I am always having my hair blown around Rotterdam, and I've crashed my bike several times by being blinded in wind tunnels from my hair depriving me of sight. The first thing I thought of was embrace. That we now live in a time of bodily terror of the other, we don't have so many furious embraces anymore, but I am being embraced furiously by the wind tunnel. The feeling was actually quite comforting, I've felt this feeling many times, of anticipation and regret over being in wind, but this time I could reflect that I was interacting with air, normally I don't think about being in the fluid medium of air. The wind tunnel inspired me to reflect on that. But I couldn't keep my hair inside for long. The sounds of the wind were terrifying. It was overwhelming, and too loud. I was having Cronenberg like visions of my hair getting sucked into the fan. I felt like I was going to be sucked into the void, or better put, the vortex.

Georgia Delgado-Fitzgerald

Georgia Delgado-Fitzgerald testing her own hair in the wind tunnel at Rib during Prof. Olivier Chazot's workshop, September 2020.

The passion exploded when Professor Olivier Chazot was given the chance to explain his field, that is physics and fluid dynamics. Even his deep blue mouth mask, which matched his clothes, could not prevent that. I thought I had stepped into a science fiction film when he showed us the principle of what wind does to an object, using a piece of wool on a stick in the glass cage of the wind tunnel.

This experience came after a compelling explanation by artist Haseeb Ahmed about the various connotations that wind has in religion, culture, as well as in other "metaphorical" areas of life. He also explained about Horror Vacui, the fear of emptiness and vacuum.

The event reminded me also of a Guadeloupe (French overseas department) saying my father would often repeat: La mister Baltimore passé, la tè ka zoukwé! (Anywhere the Baltimore goes, the earth is shaking and dancing Zouk).

Singing saws, popping bottle caps, jumping foam, anything was possible if you let your imagination run wild. No matter how minuscule the air movements your object created, it was nice to be aware of the wind and all it brings about.

You might think that certain objects will naturally make sound or movement, but that does require a bit more research apparently. I had literally made a monstrous object, with the only assumption that it might move. I also liked to bring together various materials of the same color. It was almost back to spelling with wood-blocks, the certain kind you have as a child, not being afraid of the wind or anything, going with the flow.

Erica Baltimore

Two participants in Prof. Chazot's workshop share their experience of using a wind tunnel for the first time, including making and testing their own models in the transparent test chamber and visualizing the laminar flow with the help of yarn on a stick.

COLOPHON

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